

Municipal Journal

Volume XLII

NEW YORK, MAY 17, 1917

No. 20

METERING IN SOMERVILLE

Consumption Reduced More Than Twenty Per Cent by Metering—Reduction in Demands on Sewerage System and on Sewage Pumping an Important Saving Also—Consumption Figures for the Last Thirteen Years.

By FRANK E. MERRILL.*

The city of Somerville, Middlesex county, Massachusetts, is situated just north of and adjoining Boston, the city hall being about $2\frac{3}{4}$ miles distant from the State House in Boston. It is, therefore, an important part of Greater Boston, and with its 90,000 inhabitants is, next to Boston and Cambridge, the largest city in the metropolitan district including cities and towns within ten miles of the State House.

Its local water supply since 1898, has been obtained from the Metropolitan water works system, the source of supply being the Nashua river, 35 miles distant. The city of Cambridge possesses its own supply, and Somerville is, therefore, next to Boston, the largest city and the largest consumer of water of the nineteen cities and towns forming the Metropolitan water district.

A supply is delivered to the Somerville local distribution system from large Metropolitan mains passing through the city, the inflow being measured by Venturi meters controlled by the Metropolitan Water Board. This water was introduced into Somerville on January 1, 1898, prior to which time the supply had come from another source entirely unmetered. In fact, the Metropolitan Board did not install meters on its delivery branches until 1903, at which time legislation was enacted which made water consumption have a bearing on the annual water assessments levied by the State. This new legislation provided that the state water tax should be apportioned among the different cities and towns of the district on the basis of one-third on the valuation of the city and two-thirds on the consumption of water, and this had the expected effect of spurring Somerville and the whole district to a more lively restriction of water waste through the larger installation of meters.

Before 1904, therefore, the per capita consumption of water in Somerville was unknown, there being no way to determine the quantity supplied to the city. There had been installed, however, in previous years, a few meters, commencing in 1898 and reaching the number of 647 at the close of 1903, and an estimate of the per capita consumption had been made by the writer, based on the records given by the earlier meters and some other indirect methods. The figure arrived at in this estimate was eighty-eight gallons per capita, which proved very close to accuracy as the records obtained the first year from the Metropolitan Venturi meters of all water entering the city showed the per capita consumption to be eighty-nine gallons. Further legislation was enacted in 1907, known as the Compulsory Meterage act, which required all cities and towns in the district

to install meters on all their new services, and each year until completed on 5 per cent of all old services, looking to complete meterage of the entire district in twenty years.

It has not been possible yet to check the delivery of water with the inflow, as the city is yet but 73 per cent metered, but the results of meter installation in reducing the waste of water and conserving the Metropolitan supply have been very gratifying, although it is realized that much is yet to be accomplished.

Somerville, while practically a residential city, has several manufacturing enterprises which consume large quantities of water, one reaching the figure of 224,000,000 gallons in 1916, and another consuming 156,000,000 gallons, so that the commercial consumption per capita is around fifteen gallons, and if we allow five gallons for public use we arrive at a domestic consumption at present of about forty-nine gallons, which is expected to be reduced considerably before complete metering is accomplished.

A drop in the per capita consumption of twenty gallons from 1904 to 1916 is considered encouraging and justifies the cost of the meter installation. In fact, it is believed that the installation cost has been practically offset by the reduction in the annual payment to the State for the Metropolitan water through the lowering of the water consumption.

It is to be borne in mind also that the large flow of water from unnecessary causes has its influence on the drainage systems of communities, entailing needless expense for larger sewers than would otherwise be called for, and larger drafts on the operation of sewage pumping plants, so that an unrestricted use and waste of water causes a burning of the candle at both ends and leads to ultimate large expenditures for new discharges as well as new supplies.

It may not be said that a direct saving has been made on the operating cost of the local works by the installation of meters, as no local supply has to be considered and no pumping done by Somerville on account of our connection with the Metropolitan system under control of the State; and on the other hand there is, of course, a constantly increasing cost of meter maintenance and accounting; but on the whole the writer feels that there is a considerable degree of satisfaction to be obtained through the purchase and selling of water on the scientific and equitable basis of meterage, and the conservation of the highly expensive water supply of the district through the checking of needless use and waste in the operation of the meter system.

*Water commissioner, Somerville, Mass.

The following table shows the progress of meter installation of Somerville by years and the results therefrom:

Meterage Statistics of Somerville, Mass.

Year.	Popula-	Number	Number	Per Capita Consumption:		
				of Services.	Meters.	Metered.
1897	58,000	9,601	143	1.5	1.5	(Est.) 88
1898	59,000	9,806	226	2.25	2.25	...
1899	61,000	10,053	202	2	2	...
1900	62,000	10,291	224	2	2	...
1901	64,000	10,520	269	2.5	2.5	...
1902	66,000	10,710	269	2.5	2.5	...
1903	68,000	10,854	647	6	6	...
1904	69,000	11,059	1,272	11.5	89	123
1905	70,000	11,279	2,092	18.5	89	129
1906	71,000	11,489	2,829	24.5	89	128
1907	72,000	11,662	3,455	29.5	90	133
1908	74,000	11,817	4,333	36.5	89	133
1909	76,000	12,018	5,155	43	84	123
1910	78,000	12,149	5,817	48	80	110
1911	79,000	12,357	6,533	53	74	105
1912	80,000	12,596	7,171	57	79	107
1913	82,000	12,827	7,856	61	72	94
1914	85,000	13,034	8,499	65	73	94
1915	87,000	13,233	9,155	69	67	88
1916	90,000	13,420	9,763	72.75	69	89

THAWING SERVICE CONNECTIONS*

Electrical Thawing in New York and Other Cities—Costs and Charges to Consumers—Thawing a 6-Inch Pipe Under Water.

In a city like New York fully paved with heavy pavement on concrete base, while the pavement reduces the number of cases of frozen services to a comparatively small figure except in winters of most unusual cold, it also makes the cost of digging up frozen services very high. For one item, the Bureau of Highways of Manhattan requires a minimum deposit of \$56 for a permit to open the street, this sum to cover the cost of replacing the pavement over the trench, the balance of the deposit being retained for six months after the pavement has been restored. This being the case, the advantage of any thawing method in which excavating is unnecessary is apparent.

Electricity is quite generally employed for this purpose in New York City, Superintendent Henry Stephenson of the Distribution Division of the Edison Company having on hand for this purpose equipment for handling cases from half-inch lead service 30 feet long to 1500 to 2000 feet of 6-inch iron pipe.

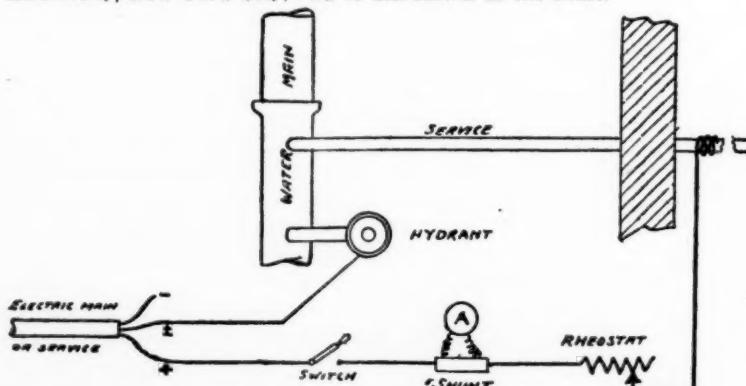
The method employed by this company is clearly shown by the diagrams, one of which applies to the use of low tension direct current, the other to the use of alternating current with a transformer, or of a storage battery. "In both cases it is necessary to complete the circuit through the house service pipe with the main by taking advantage of a nearby hydrant." (The author explained that the

use of the service of an adjoining property in place of a hydrant was seldom possible because of the unneighborliness of New York owners.) "Possibly some of the failures recorded in the accompanying table are due to attempting to complete the circuit through a hydrant connected to another main (due to poor record maps) in streets where there is more than one main in the ground." The author explained that this was quite possible in many of the streets where there were several mains since those making taps for house connections were not always correct in ascertaining or reporting which one of these mains they had connected with. Owing to the difficulty of determining this without actually digging up the street, no attempt was made to actually learn in each case whether or not this was the cause of failure to thaw the pipe.

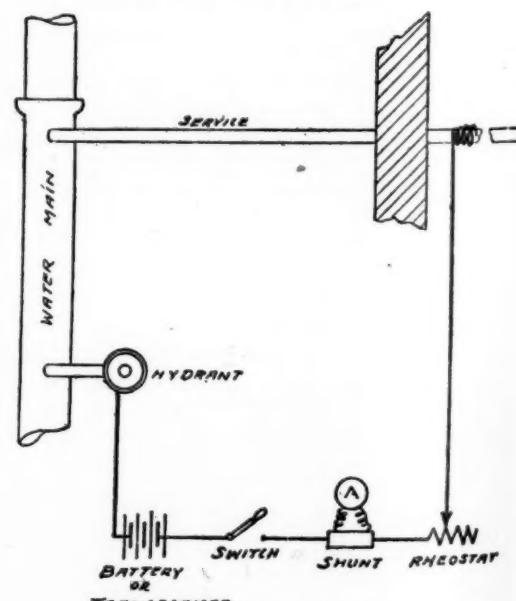
The winter of 1916-1917 may be considered as a fairly severe one, and during this winter 42 requests were received by the company for thawing service pipes. Of these, three were cancelled, two because the water was found to have already begun running before the thawing apparatus had arrived, and the other because the pipe was broken and had to be replaced anyhow. Of the remaining 39, one attempt was a failure, possibly due to some other obstruction than ice in the pipe. The other 38 were successful. The year 1911-12 was an especially active one in this kind of work and the records of this year are shown in the accompanying table. From this it is seen that 648 requests were received for electric thawing, of which 472 were successfully thawed. In 40 cases the water was found running when the apparatus arrived, 13 were cancelled because the pipe was broken, 14 because there was no plumber on the job, 3 because the plumber had already begun digging when the apparatus arrived, 1 because of other obstruction in the pipe, and 19 because the owner refused to use the apparatus after it had arrived.

The work is done by a direct arrangement between the Edison Company and the owner. When the company is requested by mail or telephone to thaw a service, a representative visits the property and has the owner or plumber fill out a form in the name of said owner or plumber, which form is a request to the superintendent of distribution of the Edison Company to thaw the services at that address, agreeing to pay therefor at the following rates: \$15 for 1-inch or less, \$20 for from 1-

*Abstract of paper before Amer. Water Works Assn. by Henry B. Machen, Asst. Engr., Dept. of Water Supply, Gas and Electricity, New York City, and of discussion of the same.



METHOD USING EXISTING LOW TENSION D. C. SYSTEM.



METHOD USING BATTERY OR EXISTING A. C. SYSTEM.

inch to 1½-inch, \$25 for from 1¼-inch to 1½-inch, and \$30 for from 1½-inch to 2-inch. These prices are for pipes not more than 75 feet long. As can be seen by the table, the amount of current used would not seem to explain the considerable differences in the prices charged. For instance, thawing a 1½-inch lead service required on the average 360 amperes for 20.8 minutes, while thawing a half-inch lead service required 250 amperes for 19.6 minutes. The other expenses were presumably the same in each case. The explanation offered by the author was that the price was probably based on what the owner could be persuaded to pay, or possibly on the assumed value to him of the service rendered.

Details of Successful Cases: Lead Pipe.

Size of Pipe	Number of Cases	Average Length	Average Minutes	Average Amperes
½"	8	33.7'	19.6	250.0
¾"	180	36.1'	8.1	323.6
1"	55	18.2'	8.3	350.6
1 ¼"	75	40.4'	14.5	340.6
1 ½"	35	40.8'	9.5	377.0
2"	12	42.9'	20.8	360.4
	3	52.3'	13.0	416.6
Totals and averages	368	35.0'	10.3	336.4

Details of Unsuccessful Cases: Lead Pipe.

Size of Pipe	Number of Cases	Average Length	Average Minutes	Average Amperes
½"	6	42.5'	32.3	315.0
¾"	2	37.5'	73.0	300.0
1"	5	41.0'	63.6	323.0
1 ¼"	14	45.0'	54.5	345.0
1 ½"	1	50.0'	80.0	300.0
Totals and averages	28	43.3'	53.6	329.8

Details of Successful Cases: Iron Pipe.

Size of Pipe	Number of Cases	Average Length	Average Minutes	Average Amperes
½"	2	32.5'	7.0	287.5
¾"	53	42.0'	9.4	341.9
1"	20	57.5'	29.7	369.7
1 ¼"	19	61.0'	26.7	403.2
1 ½"	8	39.3'	13.7	393.7
2"	2	45.0'	40.0	450.0
Totals and averages	104	48.1'	17.3	363.6

Details of Unsuccessful Cases: Iron Pipe.

Size of Pipe	Number of Cases	Average Length	Average Minutes	Average Amperes
½"	1	30.0'	33.0	325.0
1"	1	40.0'	120.0	325.0
1 ¼"	6	65.8'	61.0	329.1
1 ½"	3	35.0'	60.3	366.6
2"	1	30.0'	22.5	750.0
Totals and averages	12	50.0'	60.2	372.9



CONNECTION TO MAIN ISLAND.

Main was broken at this point to permit thawing by hot water, hose carrying which is seen entering end of pipe.

"In a number of smaller communities in the vicinity of New York the local electric companies have assembled a complete outfit on an auto truck, including rheostats, resistances, etc., and a storage battery for cases where the source of supply might be at too great a distance to warrant stringing a wire. This equipment is rented to a local plumber or water company, in a number of cases at a fixed sum of \$40 per day; the plumber or water company making direct arrangements with the property owner.

"No story of the use of electricity in thawing out a frozen water main in New York would be complete without mention of the job of restoring the water supply to North Brothers Island in 1912. North Brothers Island is located about 1700 feet from the Bronx main land and received its supply through a 6-inch main from the foot of 140th St. in the Bronx and from a 12-inch main feeding water from Rikers Island, both mains being of the usual submarine type. The main from 140th St. to North Brothers Island was 80 feet below the water surface at its maximum and the Rikers Island main about 30 ft. at the maximum.

"The island contains a number of hospital buildings for tuberculosis patients, some in the most advanced stages, the total population being about 500.

"On Lincoln's birthday, Feb. 12, 1912, notice was received in the Department of Water Supply that the supply to the island had stopped. Immediately the department force was dispatched to the Island, finding in a few minutes that both sources of supply were out of service. Continued effort to clear the ice, by cutting out a section of pipe and forcing steam in, produced no result, even though the steam hose had entered for a distance of 200 feet from each end.

"Temperatures taken on Feb. 24th showed 40 degrees F. in the open, the water at the surface 32 degrees and



VIEW OF NORTH BROTHERS ISLAND.
Showing the half of the river crossing nearest the island.

at 50 feet depth but 29 degrees. Again on March 5th a temperature of 29 degrees was found in the river at 15 ft. depth.

"On March 6th the Edison Company was called upon to make an effort to thaw out the supply. All were skeptical of the result, it being realized that conditions were not at all similar to buried pipes where the heat generated by current passing along the pipe might be retained. Here, due to the flow of the tides, the cold water around the pipe was being constantly replaced.

"A temporary frame shed was started at once on the shore of the East River and four 100-kilowatt transformers installed. These were to step down the high tension current from 2000 volts to 200 volts. By 10 a. m. the morning of the 7th, current was on, 800 amperes at 200 volts being used. By stages from day to day the amperage was raised so that on the 9th in the morning it was 1500 amperes at 400 volts, two additional 100-k. w. transformers having been installed. The next day 1800 amperes at 368 volts were flowing from the main land through the pipe to the Island.

"March 12th at 6:20 a. m., a little over 5 days after the current had been turned on, and without the slightest warning, water started to flow. In a few minutes normal conditions were restored with a full and free flow. One thousand horse power had been used, which is 36 times the amount of heat necessary to melt the same quantity of ice on land.

"The author is indebted to Mr. Henry Stephenson, superintendent of distribution, for the many details of the work placed at his disposal and liberally quoted from."

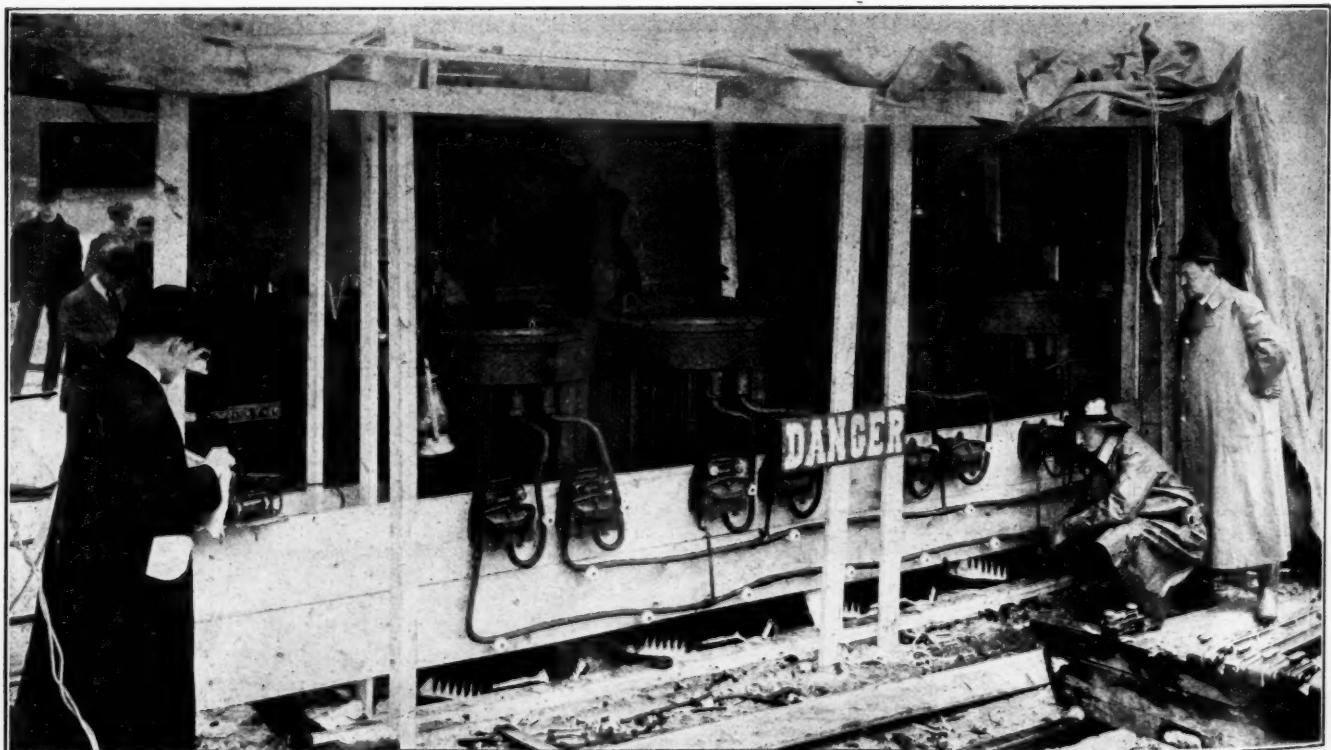
DISCUSSION OF THE PAPER.

This paper by Mr. Machen brought out considerable discussion, chiefly in the form of narration of experiences. G. O. House, general superintendent of the water department of St. Paul, Minn., stated that during the winter just (presumed to have) ended, there were more than 1,000 frozen service pipes in that city, in thawing which the department had used an apparatus which had been

constructed for them and which consists of a 4-cylinder automobile engine driving a 20-kw. direct-current 40-volt generator; a field rheostat for regulating voltage from zero to 40; and 500 feet of insulated copper cable in 100-foot lengths on a reel; all mounted on a 1½-ton trailer truck with rubber tires. This apparatus cost about \$2,700. It was found that the maximum requirement for thawing any service was 250 amperes and 25 volts. In the majority of cases it required only five minutes to thaw a service. The city made a uniform charge of \$5 per service, basing this on the average cost to them of performing the work; although in some cases it cost only \$2 or \$3 and in others \$7 or \$8.

Frank C. Kimball, manager of the Commonwealth Water and Light Co., of Summit, N. J., stated that that company used for this work a commercial transformer outfit such as is now for sale by several manufacturers. They found that a 15-kw. transformer was ample for pipes up to one or two inches in diameter and that for the ordinary ½-inch service 100 amperes sufficed. The average cost to the company of thawing services was \$5 each. No charge was made to the consumer, as the company considered that this was but one of the items in maintaining the service, which maintenance the company had agreed to perform.

Another member advocated the use of apparatus for generating current rather than taking current from the wires of the lighting company. One argument in favor of this was that considerable time was usually consumed in getting the electric company to make the connection for securing the current, which connection could not be made by the inexperienced water works employees. The average cost to his city of thawing by means of its own apparatus was \$3, whereas if the current were used from the electric company's wires, the cost averaged about \$6. The machine used by them cost about \$800. There was a financial advantage in getting to work on the service at once, in that after the pipe had once stopped flowing, the length frozen, which might at first have been only a few inches, gradually extended to the full length of the pipe and thus increased the difficulty of thawing.



TRANSFORMERS AT 141ST STREET AND EAST RIVER.

J. Walter Ackerman, superintendent of the water board of Auburn, N. Y., raised the point as to whether the responsibility for thawing rested with the company or the consumer in the case of a municipal supply where the service was laid to the curb stop by the department, and from there to the house by the consumer. In his city the department maintained the service as far as the stop, but the property owner was held responsible for maintaining the length from the curb to the house, including the thawing thereof.

Charles F. Barrett, superintendent of water works of Salt Lake City, said that the cost of thawing services in his city averaged \$2.40, using power obtained from the electric company's wires. Concerning this matter of cost, Harry F. Huy, of Buffalo, raised the question whether the low average costs given had taken into account depreciation of apparatus used, overhead costs and consideration of the fact that the interest and sinking fund charges for the apparatus continued throughout the twelve months, while the apparatus itself was used for only a few weeks. His own experience had been that when these items were taken into account, the cost of thawing was more nearly \$8 per service.

Among the experiences in using this method of thawing that were narrated by the different members, was one reported from Baltimore. In this case a water and a gas service had been in contact and the current had passed from the water to the gas service and finally resulted in welding the two together and making a hole through both pipes at the connection, following which the water passed from the water service into the gas service. This condition was discovered only when the gas lights began going out over a wide area, due to the filling of the gas mains with water from the water service.

Another city reported that they would occasionally find two or three and sometimes six or eight frozen services in one block, in which case they would thaw several services at each set up of the machine, which enabled them to reduce the average cost per service to a figure even lower than those reported by some of the other cities. In some cities fire hydrants were not used for completing the circuit unless they were near at hand, but a connection was made with the services of an adjoining house and the current passed from the connection in one service through the water main between the two services and thence through the second service to the other connection.

As to the point of connection, some cities took pains to make the connection between the main and the meter, one city even going so far as to remove the meter from the service before making the connection; while another city reported that they simply attached the wire to the kitchen faucet, as being the most convenient point. One superintendent had found indications suggesting that there had been electrolytic action in the service or at the connection between the service and the main; but the voltage used for the thawing services in this city seemed to be higher than that used by most of the others and the superintendents generally did not appear to think that

this was a serious danger. One or two, however, suggested that it was possible, and they believed that they had in certain cases discovered it to be an actual occurrence, that service pipes had been split by freezing, and that, as this method of thawing did not reveal this fact, the split service leaked continuously from that time; and that this constituted a distinct objection to this method of thawing.

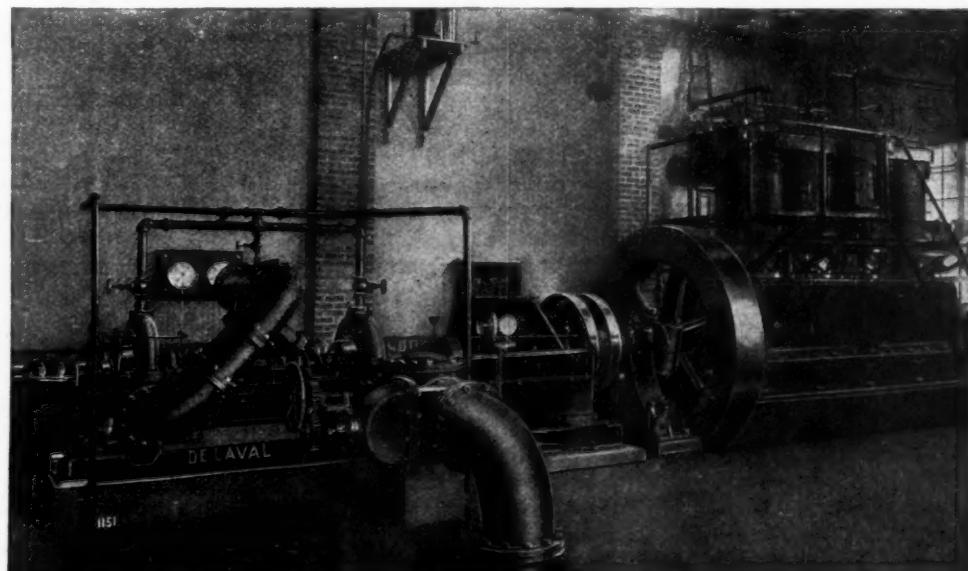
CLARKSBURG'S PUMPING PLANT

Gas Engines and Centrifugal Pumps More Economical Than Any Steam Plant Combination—Gas Fired Boilers and Duplex Pumps Previously Used.

Clarksburg, W. Va., recently put into service a new pumping plant, consisting of a 50-h. p. gas engine driving through speed-increasing gears a De Laval centrifugal pump with a capacity of 4,000,000 gallons per day, which delivers water against a 35-foot head to a filtration plant; and also a 350-h. p. gas engine running at 200 revolutions per minute and driving through double-helical speed-increasing gears a De Laval two-stage centrifugal pump which delivers the filtered effluent against a 350-foot head to the city reservoir. These engines use natural gas having comparatively high heat value, which could be obtained at an unusually low cost. The engine was guaranteed by the maker to deliver a brake h. p. on 10 cubic feet per hour of gas having a heating value of 1,000 B. t. u. per cubic foot.

Previous to the installation of the new plant, the city had used steam engine driven centrifugal low-service pumps and duplex direct-acting high-service pumps, steam being supplied from gas-fired boilers. With this equipment the gas consumption was about 350,000 cubic feet per day when pumping approximately 3,000,000 gallons. During ten days continuous run of the new plant, the total consumption of both high-service and low-service pumps averaged 82,200 cubic feet of gas per day when pumping 4,100,000 gallons. The gas used by the plant is obtained from wells near by belonging to the city, and is charged for at 6c. per thousand cubic feet, although the commercial power rate in that locality is about 8c. The fuel cost per water horsepower of the new plant based on the test run and figured at 6c. would be \$6.96 per year, and would be \$9.27 if figured at 8c.

The new plant is the result of growth in the consump-



HIGH-PRESSURE GAS-ENGINE-DRIVEN CENTRIFUGAL PUMP OF THE CITY OF CLARKSBURG, W. VA.

tion demand which required additional capacity, and opportunity was taken by the Clarksburg Water and Sewerage Board to have a careful investigation made to determine what type of plant would be most economical under the local conditions, which investigation was made by George W. Fuller, of New York City. He compared steam driven centrifugal pumps, steam driven crank and fly wheel pumping engines, gas engine driven direct-acting pumps, and gas engine driven centrifugal pumps. His preliminary estimates showed that the best gas consumption with steam driven pumps would be about three times that of gas engine driven pumps and, in view of the rapid depletion of the natural gas supply in the neighborhood, it was deemed advisable to put in the plant that was more economical of gas, although higher in first cost. Bids were therefore requested on gas engine driven direct-acting pumps and gas engine driven centrifugal pumps; with the result that the plant selected was that described above, offered by the Dravo-Doyle Company of Pittsburg. This choice was believed to be warranted because of the simplicity of the centrifugal pumping plant, low cost of maintenance and saving in floor space.

The complete cost of the pumping equipment was about \$17,500 and that of the substructure, superstructure, crane, piping and appurtenances complete was \$13,905; or a total cost of \$31,405. As the annual interest, depreciation and upkeep charge figured at 8% would amount to \$2,512.40 per year, or \$9.71 per water h. p., this would make the total cost of pumping, exclusive of attendance and supplies, \$16.67 per h. p. per year with operation for 24 hours per day, or \$14.35 if operated 16 hours per day.

CONCRETE PILE TRESTLE BRIDGES FOR HIGHWAYS.

The Minnesota State Highway Department has found, in replacing old bridges throughout the state, that the failures were due in many cases to the poor condition of the abutments and piers. Owing to the limited funds available when these bridges were built, the local authorities attempted to save money by not carrying the footings much below the bed of the stream, and floods or changes in the channel later undermined these, in many cases causing failures.

The department in searching for a type of substructure that would be safe and at the same time less expensive than the ordinary type where carried down to a safe depth, tried out the concrete pile trestle bridge, which the railroads have found economical and safe.

In this form of construction, reinforced concrete piles are cast in forms on the ground and are driven after the concrete has set for about thirty days. The top of the pile projects above the creek bed and a concrete cap is cast, surrounding the top of the piles in each bent and forming a support for the superstructure. The most economical space between bents for ordinary conditions in highway work is about 20 feet, and the new cellular slab superstructure lately tried out by the new department is a very economical design for use with this substructure. No end abutments are used and the bridge consists of enough short spans to provide the proper waterway, allowing the fill to run through the end piles on a 1:1 slope with riprap protection.

The bridge is very similar to the wood pile trestle bridges, except that concrete is used throughout, so that the rotting of the piles and joists and the wearing out of the plank floor is eliminated. Where it is not feasible to block up the channel with intermediate pile bents, there would be a long center span carried on a double row of concrete piles.

Among the advantages of this type of substructure

work is the fact that no excavation is necessary for foundations, and fewer laborers are required, thus reducing cost. The available working season will practically be doubled in length of time, as even a slight raise in water level prevents cofferdam excavation, and this will allow contractors to employ laborers at a time of the year when harvesting is not in progress.

STREET CLEANING AND REFUSE COLLECTION METHODS*

Recommendations For Improvements in Administration and Practice in Detroit, Michigan—Wages, Promotions and Uniforms—Accounts and Records.

PERSONNEL.

Concerning the street cleaning force itself, it is recommended that there be a limited amount of civil service control in the selection of the force, predicated on the establishment of physical requirements, the inclusion of a probationary period requirement, and the maintenance of historical service records of the employees. The pensioning of employees engaged in this class of work is being discussed and adopted by a number of cities and will undoubtedly be introduced in Detroit. (A discussion of this system in New York was published in Municipal Journal for March 22.) If the employees are to be pensioned, care should be taken in their selection to see that they are in proper physical condition and not likely too soon to become a burden on the pension roll. This means that new employees should be young and active men. The work of the department is hard and at times dangerous and its employees, in the case of street sweeping, should be active men with good eyesight and hearing, who will be able to keep on their feet every day in all seasons; while for the collection service, the men should be comparatively tall and strong, who can lift heavy weights without danger to themselves. In addition to this, it is desirable that attention be given to keeping the men in good physical condition by means of medical attendance and regular physical inspection rendered at the expense of the department. (See the article in Municipal Journal previously referred to.)

It is suggested that those hired for the street cleaning forces should, after passing a physical test, enter upon a probationary period in order to make sure that the city secures the type of employee required for the service, after giving the recruit a fair opportunity to learn the work. A candidate should be rejected as soon as it is clearly apparent that he is not up to the standard required by the department. The recruits should be instructed in the standard methods of performing the work, in which instruction two methods are practicable; one is in operation in New York City, in which the recruits are instructed in a class room during the morning in the use of the equipment used in cleaning streets and collecting refuse; while during the afternoon they work in the field under the eye of the instructor, the period of instruction lasting approximately twelve days. The other method is to give all of the instruction to the men individually while at work in the field. For Detroit a combination of the two methods was recommended, the inspectors previously recommended being utilized for giving field instruction after graduation from a brief course of class room work.

As to salaries, it was recommended that provision be made for a gradation of salaries in recognition of superior service or as a natural result of long service. The system recently inaugurated in New York is recommended as very satisfactory, this providing for the

*Concluded from page 658.

entrance of a recruit into the service on a temporary basis, advancement to regular service at a fixed rate for the first year, and an automatic increase in rate each year for a period of five to seven years, provided the work of the individual has been satisfactory. Provision is also made for reducing compensation from one rate to another in case of unsatisfactory service. In order to encourage employees, a definite schedule of promotions should be prepared which can be obtained by the best qualified men, credit being given at the examinations to all employees with satisfactory records, in addition to that given to men who have not been in the service.

A record of the work of each employee should be kept, it being suggested that a card index be maintained on which should be shown complete data relative to each employee or officer from the time of his first application for appointment. This should show every breach of discipline or other action which works against or in favor of future promotion, as well as all accidents, sick leave, transfers from one section to another, etc.

Uniforming the employees is recommended for four reasons: first, that uniforms tend to prevent accidents to men working in heavy-traffic streets; second, they produce greater self-respect in the organization; third, they assist in supervision by making the men more easily distinguishable to the officers; fourth, they greatly improve the appearance of the force, thereby producing a more attractive city and a certain amount of pride in the force among the citizens.

As to furnishing uniforms, it was recommended that the city purchase the uniforms for the men and charge to them a portion of the cost of the first uniform, the men themselves paying for later uniforms. Each man should own at least two uniforms, and the officers in charge should make an inspection every morning and insist that all uniforms be neat and clean. In purchasing uniforms, it is recommended that a contract be made for the entire force, through a committee organized to prepare specifications and let the contract, inviting representatives from the working force to serve so that they may learn for themselves that the uniforms are purchased at the best possible prices. This method will permit each man to purchase his uniform at considerable less cost than by acting individually.

ACCOUNTS AND RECORDS.

Regular reports and cost data are considered necessary to insure close control over the work by the administrative officers. Such reports should be made and cost data kept so that the work of the various units of the organization may be compared. These records, if properly designed and currently available, should enable both the administrator and the supervising officers quickly to locate weak spots in the organization. In many cases they also enable them to secure an element of competition between units working on similar activities and through this means to arouse an interest in devising better methods for performing the service. They will also enable the superior officers to determine the advisability or inadvisability of adopting new methods, by giving a basis for scientific determination.

The preparation of an annual report setting forth the physical results which have been obtained by the expenditure of public funds is just as important as a report which shows that the funds have been legally expended. Further, such a report may provide an avenue of beneficial publicity, through which contact may be secured between the public officers and those of the citizens who take an active interest in government. It is only through such a document that the public or interested officials can obtain any idea of whether the money has been wisely

expended and of what policy has guided the expenditure. A well designed annual report also serves as a summary of past work for the information of the administration in the future. It is therefore suggested that summaries of work performed be included in such report, as well as the expenses incurred in the performance of the work. The preparation of such reports will be facilitated greatly by the installation of a good cost accounting procedure.

PAVING IN MINOT, N. D.*

Street Grading with Steam Shovel—Methods of Mixing and Laying Base—Wood Block and Bitulithic Pavement.

By AUGUSTUS HUNT.

Paving work totaling 54,000 square yards of wood block and bitulithic was done by Minot, N. D., during 1916. This work, in connection with sewer, water, grading and ornamental light contracts, cost about \$350,000, or approximately \$30 per capita for the whole population of the city. Of the 54,000 sq. yds., 32,000 yds. were of wood block and the remainder of bitulithic. The cost of the wood block, including the concrete base, varied from \$2.89 $\frac{1}{2}$ to \$3.08 per square yard, most of the work being done at the lower figure, while bitulithic was laid at \$2.53. Excavation and grading were extra in all contracts and averaged 60 cents per square yard. Hanlon & Okes, of Sioux City, Ia., were the contractors.

Construction was begun in the latter part of May. The contractor started excavating with an Erie steam shovel having a 1 $\frac{1}{2}$ -yard bucket, digging half the roadway at a time. In this way a continuous movement of dump wagons was maintained from the shovel to the dump. On streets where there was a curb, the steam shovel operator, when given the depth of cut and crown, could generally keep within 3 or 4 inches of grade; but on streets where no curb had been constructed it was found necessary to keep a level on the job and give grades every 25 feet. It was found to be more economical to cut a little too deep, rather than not deep enough, as it was more costly to cut down by grading gang than it was to let the shovel cut too deep and cast back, the grading crew leveling off the piles. This method also gave a much evener surface when compacted by the roller and did not require so much pick work.

A parabolic section with a crown height of 4 inches for a 40-ft. street and 5 inches for a 50-ft. street was used for the wood block, except where there was a fairly heavy longitudinal grade, when a flatter crown was used. On streets paved with bitulithic, a 5-inch crown was used on the 30-ft. streets and a 4-inch crown on 26-ft. streets.

All storm sewer connections, inlets and catch basins were laid by the contractor, after excavation to the required sub-grade by steam shovel. The contractor sublet all private water and sewer connections at \$1 per foot, laid to the inside of the curb. In connection with this work, it was noticed, in a block where ten private connections were laid, that the main sewer (one of the first built in the city) was running nearly full at some openings and nearly empty at others. Investigation showed a variation of 1 to 8 inches from a uniform grade, and the whole block had to be taken up and relaid. Conduit for the street lighting system was laid after rough-grading and before rolling the sub-grade. Manholes were built where repairs of broken gates or boxes seemed likely to delay the contractor, considerable trouble being caused by breaking of the gate boxes by the steam shovel.

*Abstract of paper before North Dakota Society of Engineers.

Gravel for the concrete base was secured in the form of "bank-run" from a pit about one-fourth mile from the city. Tests showed a good grading and specifications required a 1:6 mix. A Koehring mixer, with a 1-yard skip, mixed 2/3-yard batches at a time. The skip was loaded by wheelbarrows, two barrows of gravel and a sack of cement being dumped at a time. An extra man was provided for each barrow to assist in loading at the stock pile. Toward the end of the season men became rather hard to get and the steam shovel was used to load gravel from the stock piles into small side-dump cars running on an industrial track to the mixer. This was found to be a rather cheaper way and helped to solve the labor problem.

The base for both wood block and bitulithic was 5 inches thick. Where the paving was to be laid over trenches, No. 25 Kahn mesh was placed over the fill and, after the concrete was spread, pulled up with hooks so that it occupied a position about half way between the upper and lower surfaces of the concrete. Toward the end of the work this type of reinforcement became unobtainable and Clinton wire cloth was substituted. As most of the base was laid in warm weather, it was necessary to cover and sprinkle the concrete. Where the wood block was to be laid, sand, later to be used as a sand cushion, was spread as a protection, and kept moist.

The sand cushion for wood block was spread $1\frac{1}{2}$ inches thick and rolled to 1 inch. Where the wood paving was subject to flooding, cement was mixed with the dry sand in the proportion of 1:4. Strips $1\frac{1}{2}$ inches thick were laid at curbs, quarter points and centers as bearing points for the striking boards. These were withdrawn as laying of the blocks progressed and the spaces filled with sand.

After the leveling of the sand cushion, half-inch wood strips were placed along the curbs and two rows of blocks separated by a half-inch strip were laid. Blocks were then laid at an angle of 60 degrees with the curb. All blocks were laid loose and irregular openings at the curb were filled by chipping warped or broken blocks to the required size. Specifications called for $3\frac{1}{2}$ -inch creosoted tamarack blocks with 16-pound treatment, laid to break joints at least $1\frac{1}{2}$ inches. Inspectors removed defective blocks by jabbing with a sharp iron, the loose placing of the blocks permitting them to be withdrawn easily. After rolling with a 5-ton roller, Barrett paving pitch was applied with mop and bucket. The half-inch strips at the curb and between the longitudinal rows of blocks were removed and the spaces filled about half full with pitch, long-mouth buckets being used for pouring. The expansion joints so formed have been found to be adequate and satisfactory. The final work consists in spreading coarse sand over the surface.

In laying the bitulithic, the surface of the base was rottened by raking and pitting to insure thorough binding. The hot material was brought in wagons and dumped on the finished base at the edge of the last rolled section. The pile was spread by men with heated shovels and rakes to a thickness of 2 inches, after which it was rolled over with a 10-ton roller. Over the rolled surface was spread a seal coat of $\frac{1}{4}$ gallon per square yard of bitulithic cement and over this a layer of coarse sand, which was thoroughly rolled. Where the bitulithic pavement ended or joined another pavement, a bitulithic header was constructed by increasing the top coating from 2 to 5 inches in thickness over a width of 12 inches.

In the alleys which are paved with wood block the surface of the paving is concave. A header on each side of the alley 18 inches wide and 12 inches deep for a width of 6 inches at the outside forms a concrete strip

along each building line. The top of the header is flush with the edges of the blocks, while a depression of 3 inches at the center of the alleys provides ample drainage, especially since the alleys paved have a grade of over 3 per cent. Catch basins set in the center of the alleys at the lower end of each block carry off all storm water and provide for the flushing of the alleys.

At the intersections of streets paved with wood block the paving has been laid through on the street having the greater grade and transverse expansion joints provided on the street with the lesser grade at each property line. This joint was made up of two rows of blocks with a half-inch space between them filled with paving pitch. All crossings were swelled, the swelling starting about a foot and a half inside the property line and continuing around the corner to the adjacent property line. At these swellings the pavement surface was brought to within 3 inches of the top of the curb.

No expansion joints were used in the concrete base. All curbs were concrete and 6 inches thick, 18 inches deep and 6 inches above the pavement. Kahn curb guards are used at all corners and the curbs are given a wood floated surface.

Two parties, each composed of one instrument man, two chainmen and an axman, acting under the direction of an assistant engineer and two inspectors, one of whom was at the mixer and another at the point of delivery of the concrete, were on the job at all times. R. H. Hunt & Co. were inspectors on the wood blocks and furnished reports on each shipment of blocks, having a man at the creosoting plant. All paving was constructed under the charge and direction of E. J. Thomas, city engineer.

ST. LOUIS CONSIDERING DISTRICTING.

St. Louis has appointed a city plan commission of nine members, on which commission also serve the president of the board of aldermen, president of the board of public service, director of streets and sewers, commissioner of parks and recreation, and the building commissioner. One of the matters taken up by the city plan commission is that of districting the city, and a districting committee of six members has been appointed, which is assisted by Harland Bartholomew, as engineer, and Andrew L. Bostwick, as secretary. This committee has recently sent a circular to a number of individuals and organizations of the city asking their opinions as to various matters pertaining to districting. It is the intention of the committee, after having drawn up the restrictions, to publish them in detail and hold public hearings on them before the ordinances are passed.

Opinions are asked as to what height is desirable for one-family dwellings, apartments and tenements, office buildings and buildings for industrial and light manufacturing; the maximum and minimum percentages of lot area to be occupied by buildings of each of the classes just named, and what percentage of such lot area should be devoted to front yards, rear yards and interior courts; evils caused by size and arrangement of buildings on adjacent lots; advantages and disadvantages of fixing special districts for residential, commercial and industrial buildings; where and how the residential, commercial and industrial districts of St. Louis should expand. Is the economic welfare of the city menaced at any point through the expansion of any one of these districts; if so, what measures would most effectively check such tendencies? In sections of the city where property and building values have greatly depreciated, would proper and reasonable districting restrictions assist in rehabilitating these districts? In your opinion, is a districting plan calculated to benefit the health, safety, economic and general welfare of the city?

Municipal Journal

Published Weekly at
243 West 39th Street
by
Municipal Journal and Engineer, Inc.

S. W. HUME, President
J. T. MORRIS, Treas. and Mgr. A. PRESCOTT FOLWELL, Sec'y

A. PRESCOTT FOLWELL, Editor
W. A. HARDENBERGH and SIMON BARR, Assistant Editors

Telephone, 9591 Bryant, New York
Western Office, Monadnock Block, Chicago

Subscription Rates.

United States and possessions, Mexico and Cuba.....\$3.00 per year
All other countries.....4.00 per year
Entered as second-class matter, January 3, 1906, at the Post Office at
New York, N. Y., under the Act of Congress of March 3, 1879.

Change of Address.

Subscribers are requested to notify us of changes of address, giving
both old and new addresses.

POSTAGE AND PERIODICALS.

The dissemination of information by printed matter—daily, weekly and monthly periodicals as well as books—has become so common and abundant that probably few of us realize how much we have come to rely upon it in our business and professional operations. It would be interesting to carefully consider how much each of us owes to the technical and trade press; interesting and by no means an idle speculation, for if the Ways and Means Committee's proposed increase in postal rates is adopted by Congress, it is quite possible that most if not all of the periodicals dealing with engineering and municipal matters will cease publication. Why, a bare statement of the facts will suffice to explain.

Postage now forms a very important item of the operating costs of periodical publishers. A careful calculation shows that the new rates would increase this cost 420 per cent for the average periodical. It also shows that there is not, to the best of our belief, a single periodical serving the field mentioned which will not find this increase to greatly exceed the profits made by it last year. Publishers of 86 of the leading periodicals stated under oath a few days ago that their average net earnings for 1916 were \$15,000 each, and that the proposed postal rates would add an average of \$40,000 to their expenditures. Publishers are willing to divide their profits with the government; but if the government demands all the profits and more, there will be no alternative for the publishers but to cease paying the government anything at all by ceasing to publish. For government as well as publishers it is the alternative of half a loaf or no bread.

If the proposed rates become a law, publishers will be faced with only three alternatives. Either they must run their business at a loss (and the majority of publishers are not in a position to conduct such expensive philanthropies); or they must cease publishing; or they must increase their profits sufficiently to cover the excess postage. As to the last, the great increase in cost of paper, and to a less extent of labor, together with the depression in many branches of business that has affected advertising, have already forced upon most of us all the economies and increases in efficiency that seem to be possible, and our expenses can not be reduced further. Increase in income must come from either advertisers or subscribers, or from both; but the advertisers have already submitted with good grace to an increase in rates to help us meet the enormous increases in cost of paper, and we can not well ask them immediately to accept a

still further raise. A raise of from one to two dollars in the subscription price would be necessary, in the case of most periodicals, to cover the increased postage, with no material reduction in the number of subscribers resulting therefrom; and past experience would indicate that this can not be hoped for. And this forces us to the alternative of extinction—not one paper alone, but all of us.

We wish each reader would consider seriously whether he would be inconvenienced should all technical, municipal and trade papers be discontinued; and if he concludes that he would be, that he immediately telegraph or write his congressman at Washington protesting against this proposed postal rate increase which places such an overwhelming burden upon the one industry of publishing periodicals.

TURN SEEING HARDSHIP TO ADVANTAGE.

A number of the members of the American Water Works Association at the convention last week narrated experiences, most of them remarkably satisfactory, with the use of machinery for excavating trenches for water mains; the use of machinery in most cases probably having resulted from the scarcity and high cost of labor. Several reported very low unit costs and it seems probable that this use of machinery will be continued by many water departments, even after return of normal labor conditions and wages.

This is one illustration of the many which we anticipate will occur during this crisis, of beneficial results from what at first appeared to be a hardship. We could cite several instances of men who, having leisure forced on them by lack of work, have utilized it to such advantage that the work done at that time has proved to be of more lasting benefit to themselves than could possibly have been the business whose loss they considered at the time to be a hardship; and we believe that if water works superintendents will be equally alert to take advantage of opportunities offered by the certain amount of enforced leisure which high prices and scarcity of labor seem likely to cause, they also may turn this seeming hardship into a lasting benefit.

Many superintendents have for years been so busy extending distribution systems and other features of their plants that they have had no time to give adequate attention to the existing plant. If present conditions should curtail extensions for a year or two, they should seize the opportunity thus offered of going over the entire plant and bringing it up to a state of higher efficiency. For instance, is it not possible that, instead of installing new pumping engines, the old engines can be so improved as to more than meet the needs of the present and immediate future? Probably 10 per cent to 25 per cent slip may be found in many pumps, and reducing this to a 4 per cent or 5 per cent slip may not only permit postponing for some time the installing of additional machinery, but will reduce the cost of operating the old and thus confer a double benefit. In the boiler plant, also, much can possibly be done to increase efficiency by replacing labor with mechanical contrivances, by more frequent cleaning of the boiler tubes, and by stopping cracks in boiler settings or other openings through which cold air can enter under the boiler. Also it is almost unbelievable by one who has not actually tested it, how much steam can escape from an apparently insignificant leak in a steam pipe; and the stopping of two or three such leaks may permit the deferring of an apparently necessary enlargement of the boiler plant.

As to the pipe lines, scores if not hundreds of instances are on record of 50 per cent reduction of carrying capacity of pipes by tuberculation, deposits and growths in them. A considerable proportion of the new pipe laid in cities is for the purpose of securing increased capacity along ex-

isting routes, and it would be interesting to learn in how many cases such new construction could have been deferred for a number of years by a cleaning of the old mains which would have increased their capacity by 50 per cent to 100 per cent. When it comes to the matter of leaks from mains, we have opportunity for double economy, in that the stoppage of such leaks will increase the effective capacity of both mains and pumping plant and permit postponing enlargement or duplication of both, without any expense other than stopping such leaks.

The first thing, and that requiring the most time and

thought, is the ascertaining of existing conditions. The amount of slip and of leakage from mains must be determined by pitometer measurements or other means as a preliminary to this renovation. But such information should be had in any event as an item of maintenance cost; and having this information, and having learned the cost of reducing pump slip, cleaning mains, etc., and on the other hand, that of new pumps and new mains at present prices, the relative economy can be ascertained of bringing the existing plant up to higher efficiency and of installing new, respectively.

AMERICAN WATER WORKS ASSOCIATION CONVENTION

Account of the Richmond Convention—Election of Officers—St. Louis Chosen for the 1918 Convention—Excellent Financial Condition—Instructive Discussion of Most of the Papers—“Fine Exhibit of Appliances.”

The 37th annual convention of the American Water Works Association, held in Richmond, Virginia, May 7th to 11th, while not attended as largely as have been some of the previous ones, can certainly be considered a success from this point of view when compared with conventions of other societies held this year, and in view of the conditions consequent on the war. That such conditions are not merely imaginary was evidenced by the fact that at least three of the papers and reports were missing because their authors had been “called to the front” and so were not able to be present in person or to prepare the papers for presentation. In all, about 225 active members were registered and 150 associate members. Presence at the convention of a very considerable number from Canada and New England, as well as from Chicago and other middle west points, showed the sustained interest of the members in the society.

The program was carried through practically as published, except for the omission of two or three reports for the reason just mentioned and two or three others for reasons not given. To compensate for this, however, many of the papers were discussed quite fully, this being especially true of those presented on superintendents' day. The secretary and executive committee are to be congratulated on their success in meeting the wishes of many of the members that sufficient time be given to the superintendents for discussion of practical operating details. A morning and afternoon session were devoted to such discussion, the only interruption being the consideration for ten or fifteen minutes of a business matter, which interruption appeared to be unavoidable and in no way interfered with the success of the superintendents' day. The president emphasized the fact that merely allotting a time for superintendents' day was by no means all that was necessary, since many of those officials are modest or diffident in presenting their experiences before the conventions and the society's officials found it necessary to use all of their persuasive powers and a vast amount of correspondence in soliciting experience papers which might form the nuclei for practical discussions. It is certainly to be hoped, as he stated, that, encouraged by the success of this year's superintendents' day, the superintendents will next year volunteer papers describing many of their more interesting experiences without imposing upon the officers so much labor in an effort to bring them out.

The convention devoted its time very largely to the serious business of reading and discussing papers, together with some matters of a business nature which received the interested attention of the members for a few hours during the week. One of these was the adoption of resolutions which were telegraphed to President Wil-

son, in which the American Water Works Association “pledged its readiness to serve the national government in such manner as may be most helpful in the present national crisis”; the discussion of which motion brought out the patriotic sentiments of the members.

Another matter which received the attention of the convention was a statement made by Charles R. Henderson in which he satisfied such members of the convention as were not familiar with the conditions under which his name appeared on the recent ballots as running for two offices, that he was open to absolutely no criticism on this account. He explained (what those who were acquainted with the matter fully appreciated) that his nomination for president had been made not only without his approval, but without his knowledge, and that he was unaware before the printing of the ballots that his name had been proposed for this office. As the members are aware, Mr. Henderson at once had printed a circular letter addressed to every member of the society, stating that this was the case. The whole affair was certainly unfortunate and ill-advised, and it is believed that the election procedure of the society will be changed in the future, so that the incident can not occur again of a man's name being placed upon a ballot without his knowledge and consent. All of the members who were present are, we believe, fully convinced that no blame whatever can attach to Mr. Henderson in this matter, but that his action throughout has been most honorable.

The result of the letter ballot for officers, which was announced on Tuesday morning, was the election of T. A. Leisen for president, C. R. Henderson receiving 109 votes out of 706; of A. W. Cuddeback for vice-president by 367 votes to Mr. Henderson's 334; J. M. Caird for treasurer by 541 votes to 162 for A. A. Reimer, and B. M. Little and W. S. Cramer as trustees with 640 and 393 respectively, H. B. Morgan receiving 370. It was generally believed that, but for the unwarranted placing of Mr. Henderson's name upon the ballot for president, as already referred to, he would have received a majority of the ballots for the position of vice-president.

St. Louis was chosen for the 1918 convention. To the great credit of the Finance Committee—H. E. Keeler, Chas. R. Henderson and H. B. Morgan—the finances of the society have improved so substantially since the New Orleans convention (where the society was nearly “stone broke”) that the society now has \$6,000 invested in bonds and more than \$3,200 in the bank, there having been a gain of \$2,147 in cash resources of the society during the year. The budget for the coming year was fixed at approximately \$11,000. Feeling that he had attained his object of placing the society on a sound financial basis,

Mr. Keeler insisted on being relieved of the chairmanship of the finance committee, and the society passed a vote of thanks for his invaluable services. The incoming executive committee appointed as the new finance committee J. Waldo Smith, George A. Johnson and Frank A. Barbour.

An important feature of the policy of economy adopted by the finance committee has been the keeping down of the cost of the publication, which was carried out by the Publication Committee. The members of this committee also insisted on being permitted to resign. It is to be hoped that the successors of these two committees will not yield to the opposition that always exists against economical measures and permit the society to again lapse into the financial slough from which it has twice been rescued.

The Committee on Constitution had no formal report to make, but it is expected that by next year the new committee will be ready to recommend some changes in the method of electing officers if in no other details.

THE EXHIBITS.

The exhibits were displayed in a hall at the head of the grand stairway of the hotel, which hall, although of considerable size, was quite compactly filled with the display. The firms represented there and the nature of their exhibits were as follows:

United Brass Mfg. Co., Cleveland, O. Brass goods.
Union Water Meter Co., Worcester, Mass. Water meters.

Ford Meter Box Co., Wabash, Ind. Meter boxes.
Builders Iron Foundry, Providence, R. I. Venturi meters.

American Bitumastic Enamel Co., New York City. Pipe coating.
Leadite Co. of America, Philadelphia, Pa. Pipe joint compound.

National Meter Co., New York City. Water meters.
Simplex Valve & Meter Co., Philadelphia, Pa. Pitot rod, Pitot tube recorder, stand-pipe regulator, Venturi meter.

Central Foundry Co., New York City. "Universal" cast-iron pipe.
Engineering & Contracting. Magazine.

Worthington Pump & Machine Co., New York City. Water meters.

Alexander Milburn Co., Baltimore, Md. Portable light.
H. W. Clark Co., Mattoon, Ill. Meter and curb boxes; meter tester.

Wallace & Tiernan, New York City. Complete liquid chlorine apparatus.

Hays Mfg. Co., Erie, Pa. Brass goods; curb boxes.
United Lead Co., New York City. Lead wool; lead goose necks.

Standard Asphalt & Rubber Co., Chicago, Ill. Pipe coating.

Ross Valve Co., Troy, N. Y. Regulating valves.
Glauber Brass Mfg. Co. Brass goods; supplies.

Fire & Water Engineering, New York City. Magazine.
Buffalo Meter Co., Buffalo, N. Y. Water meters.

National Water Main Cleaning Co., New York City. Water main cleaner.

Municipal Journal, New York City. Magazine.
Sanitary Company of America. Curb box, repair cover.
Permutit Co., New York City. Water softening system.

Neptune Meter Co., New York City. Water meters.
R. D. Wood & Co., Philadelphia, Pa. Pipe and hydrant.

Maritimo Coating Corporation, New York City. Pipe coating.

Harrison Brothers, Philadelphia, Pa. Sulphate of alumina.

Sanitation Corporation, New York. Working model of Riensch Wurl sewage screen.

H. Mueller Mfg. Co., Decatur, Ill. Brass goods; drinking fountains; tapping machine.

Kennedy Valve Co., Elmira, N. Y. Valves and hydrants.
Pittsburgh Meter Co., Pittsburgh, Pa. Water meters.

Pittsburgh Filter Co., Pittsburgh, Pa. Water filters.

American City, New York City. Magazine.

Bingham & Taylor, Buffalo, N. Y. Curb and meter boxes.

Badger Meter Co., Milwaukee, Wis. Water meters.

Chris D. Schramm, Philadelphia, Pa. Portable air compressor; drills.

R. U. V. Co., New York City. Ultra violet ray water sterilizer in operation.

East Jersey Pipe Corporation. Lock bar steel pipe.
Engineering News-Record, New York City. Magazine.

N. Y. Continental Jewel Filtration Co., N. Y. C. Water filters.

Lead Lined Pipe Co., Wakefield, Mass. Lead lined wrought pipe.

Electro Bleaching Gas Co., New York City. Liquid chlorine and apparatus for applying same.

Eddy Valve Co., Troy, N. Y. Valves and hydrants.

Carbic Mfg. Co. Portable light.

Multiplex Mfg. Co., Berwick, Pa. Pressure regulators.
The Garlock Packing Co. Packing for steam or water.

Hersey Meter Co. Water meters.

U. S. Cast Iron Pipe & Foundry Co., Burlington, N. J. Cast iron water pipe.

Birch Hintz Mfg. Co., Chicago, Ill. Pump valves.

Rensselaer Valve Co., Rensselaer, N. Y. Valves and hydrants.

Gamon Meter Co., Newark, N. J. Water meters.

Pitometer Co., New York City. Detection and measure of flow of leaks in water mains.

Central Brass Co., Cleveland, O. Brass goods.

A. P. Smith Co., East Orange, N. J. Tapping machines; brass goods; c. i. fittings; hydrants, and curb boxes.

Water Works Equipment Co., New York City. Water works supplies.

Thompson Meter Co., Brooklyn, N. Y. Water meters.

PAPERS AND DISCUSSIONS.

The business sessions of the convention began on Tuesday morning with the reading of a paper by J. W. Alvord, entitled "Recent Tendencies and Progress in Water Works Practice." In this paper Mr. Alvord reviewed the progress made in the several principle departments of water works practice during the past ten years. This review gave an excellent summary of the general trend of development along these lines and we are expecting to publish this paper in full or in abstract. This paper was followed by a discussion by several members, including Rudolph Hering and F. F. Longley, the latter stating among other things that during an investigation a short time ago of the percentage of water accounted for in different cities, he found forty European cities which claimed to account for 100 per cent of the water delivered to the mains; and he believed that even if 100 per cent was not possible, it was perfectly practicable in this country to greatly reduce the high percentage of unaccounted for water.

R. J. Wig, of the United States Bureau of Standards, then read a very instructive paper on "The Use of Concrete in Water Works Structures, with Special Reference to Its Resistance to Elemental Action." Mr. Wig stated that the conclusions given in the paper were the result of thousands of laboratory experiments and also of investigations of actual structures, many, if not most of them, being those connected with the government irrigation projects. Possibly the most important point brought out by this paper was the importance of consistency of concrete in securing strength and soundness. Mr. Wig believed that more failures or partial failures were caused by the use of too liquid concrete than by any other defect. He stated that a slight addition of water beyond that which produced the most effective consistency had been known to cut the strength of the concrete by 50 per cent. For this reason he contended that chutes used for distributing concrete should make an angle of not less than 20° with the horizontal, since concrete would not flow at flatter grades unless more liquid than it should be.

Probably the next most important point in connection with the preparation of concrete was the thoroughness of mixing. He believed that good work required actual mixing for at least two minutes, and he cited the case of one contractor who, in a desire to securing an especially good quality of concrete, had voluntarily maintained a

mixing of twenty minutes for each batch. This thoroughness of mixing not only secured greater uniformity of concrete, but also resulted in a greater fluidity with a given amount of water and therefore permitted the use of a drier concrete than could be used with equal convenience if the mixing were not as thorough.

Mr. Wig stated that he had been asked to express an opinion concerning the use of the cement gun and concrete atomizer. His opinion was that both of these gave a very dense cement or concrete surface and that they could be used very satisfactorily; but that they were not fool-proof and if used without adequate precautions might not always produce satisfactory results.

In discussing this paper, Mr. Longley stated that it had been the practice of his firm to increase the amount of cement over that considered desirable a few years ago, since the price of cement was so much lower and the cost of labor higher that he believed equal strength could be secured at a less cost by increasing the amount of cement than by increasing the time of mix or other features involving labor. Rudolph Hering and J. N. Chester also discussed this paper.

The next paper on the program was one entitled "Water Supply for Military Camps" by John D. Kilpatrick. This paper, however, was not presented, both because Mr. Kilpatrick was with his regiment, and also because, on account of War Department orders received within the last week on the subject of changes in water supply in connection with cantonments, a greater part of the paper as prepared was obsolete.

In the absence of the author, H. P. Letton, the paper entitled "Enforcement of Standards for Water for Interstate Carriers" was read by Robert Spurr Weston. In this paper Mr. Letton recited the beneficial effects which these standards have had throughout the country, in that a number of cities had improved their purification procedure in order to secure a compliance with the standards. He called attention to the fact, however, that the standards were not originally prepared for municipal water supplies, and that certain of the bacterial standards would have been made more stringent if prepared for this purpose, and that cities whose water complied with this standard, while they had taken a step in the right direction, should not be encouraged to feel that they had secured a perfectly satisfactory water. In concluding his paper, Mr. Letton stated his opinion that the requirements of the bacteria standard were not sufficiently stringent, although that of *B. coli* was satisfactory; that sanitary surveys of the sources of supply are essential to correlate the bacteriological analyses; and that the Treasury Department standard has been of great value not only in connection with the drinking water furnished by interstate carriers, but even more in the establishing of a higher criterion for municipal supplies than had previously been accepted.

This paper was discussed by Messrs. Alvord, Bartow, Wigley, Tolman, Cappelen and others; one point discussed being that of the sources of supply which had been found to furnish satisfactory water for the interstate carriers. In this connection Mr. Cappelen cited certain deep wells in Minneapolis which had been assumed to be furnishing a perfectly safe water, whereas upon investigation it was found that the water was considerably polluted, the reason for which was discovered to be the failure of the lower and smaller casing of the wells to be connected in a water-tight manner with the upper and larger casing, surface pollution finding its way down the outside of the casing and into the casing at the junction between the two sizes.

Following this paper the results of the election for of-

ficers were announced, the figures being as already stated.

The afternoon session opened with the reading of Mr. Clarence Goldsmith's paper entitled "Reliability in Pumping Station Design." The paper consisted largely in a reciting and amplification of the conditions as to pumping plant, storage, etc., which are advocated by the National Board of Fire Underwriters, as described in the Municipal Journal for March 29th and April 12th. J. N. Chester, discussing this paper, stated that while most of the conditions advocated were desirable, the majority of small cities simply could not afford to provide them, and he questioned in fact whether any city, large or small, had ever fully reached the standard set by Mr. Goldsmith. That portion of the paper recommending that all filters be by-passed so that raw water could be obtained for fire purposes in case of a filter break-down was unqualifiedly condemned by Mr. Chester and other members; the former advising any superintendent who had a filter by-pass to smash it as soon as he got home, believing that the loss by fire of one or two houses or even an entire block of property was preferably to a typhoid epidemic which would be most seriously threatened by the use of an unfiltered supply, especially in a community which had become accustomed to filtered water and had lost a certain amount of immunity which is probably enjoyed by those who have for years been drinking a more or less polluted water. Reference was made to instances where scores of deaths had resulted from a few hours' use of such by-passes.

A paper by Leonard A. Day entitled the "Improved Efficiency of the St. Louis Pumping Stations," described quite fully and interestingly the changes that had been made in the past few years leading to such improvement in efficiency. In one of the stations this improved efficiency resulted in a decrease in operating expenses of more than 30 per cent, while in the other two stations the improvement was only relatively less. Many of these improvements were in details of upkeep and operation, rather than in expenditure of capital for more efficient machinery, while others consisted of installing mechanical stokers, economizers, ash handling apparatus, etc.

The efficiency of pumping stations in Boston was described in a paper by O. A. Doane. In connection with this Mr. Doane showed by lantern slides some of the older pumping machinery which, when installed a number of years ago, was of unusually high efficiency, but which was now surpassed 50 per cent or more by the improvements made in pumping machinery within the past twenty years. In discussing these two papers, Mr. Henderson called attention to the advantages in the keeping of complete records by small pumping plants, in order that they might learn the points in which their efficiency could be improved. Another paper on a similar topic by Mark Wolff entitled "Pumping Station Costs and Efficiency Records" was read by J. M. Goodell and discussed by Mr. Leisen and others.

"The Relations Between Water Departments, Companies and the Public," by W. C. Hawley, was read by Mr. Weston, and a paper on a similar topic by A. A. Reimer entitled "Relations Between Water Department and the Public" was read by Mr. Goodell. These two papers dealt with experiences in dealing with and endeavoring to satisfy the consumers of both public and private plants, with certain suggestions as to how the relations between the superintendent and the consumers could be maintained most agreeable and profitable.

The evening was given over to a reception in the auditorium of the hotel, with music and refreshments provided by the Water Works Manufacturers' Association.

(To be continued)

The WEEK'S NEWS

State Highway Progress in Oregon, West Virginia and Washington—Pennsylvania-New Jersey Free Bridges—Boston's Paving Financing—Housing Problem in Boston and the Philippines—The Waterworks of St. Paul and Watertown—Lower Rates for Ashtabula and Terre Haute—Iowa Legislates for Its Cities—New York City Must Have Tentative Budget—The Election in Dallas—Taxation in Court in Boston and Lincoln—New Rapid Transit Line in New York City—Detroit's Shade Trees—Houston's Municipal Exhibition.

ROADS AND PAVEMENTS

Oregon's Highway Funds Available.

Salem, Ore.—According to an opinion of attorney general Brown, rendered at the request of Herbert Nunn, state highway engineer, the highway fund is immediately available for carrying on the work of the department, including bridges and surveys for roads. The attorney general holds that the provisions of chapter 175, of the laws of 1917, which provide for the use of the state highway fund in matching the federal appropriation under the Shackleford bill, are superseded by the provisions of chapter 237, laws of 1917, which create the state highway department and which also stipulated the manner in which the state highway funds shall be expended. The attorney general points out that chapter 237, passed subsequently to the passage of chapter 175, provides that the highway funds shall be used, first, to meet the salaries and expenses of the highway department; second, to set aside a sufficient amount to cover the cost of operating and maintaining state highways which have been constructed or improved; third, to meet the federal appropriation; then the remainder shall be used for any purposes of the act. While chapter 175 provides that the highway commission shall first set aside out of the moneys received in the highway fund each year a sufficient amount to comply with the federal act. If this were done only the surplus could be used for the general work of the highway department.

Interstate Toll Bridge Elimination.

Harrisburg, Pa.—The legislature has passed the Conner bill, providing for co-operation between Pennsylvania and New Jersey on the plans to connect Philadelphia and Camden with a bridge or tube. Under the terms of the bill, Philadelphia would be enabled to build either a bridge or tube across the Delaware. The cost of the bridge would be defrayed by New Jersey and Pennsylvania in equal proportion, while Philadelphia and Camden would have to pay the cost of the approaches to the bridge or tube, and the necessary condemnation of land. Maintenance of the bridge or tube would be made the duty of the two cities it is to connect. The Public Grounds and Building Commission is authorized to co-operate with a similar commission from New Jersey in arranging the plans and consulting with the government.

Trenton, N. J.—President Samuel Tilden French, of the New Jersey Bridge and Tunnel Commission, is very much gratified at the passage by the Pennsylvania legislature of the Conner bill. For the program of free bridges that has been worked out by John A. Campbell and his associates on the New Jersey Commission, and governor Martin G. Brumbaugh, of Pennsylvania, and his associates on the Pennsylvania commission. There is now available for free bridge work a total of \$200,000, \$100,000 having been appropriated by each of the two states. The last New Jersey legislature appropriated another \$100,000 for this cause, and the Pennsylvania legislature will appropriate another \$100,000, making a total of \$400,000 to be available November 1. The financial policy of the two states for the freeing of Delaware river bridges contemplates the expenditure of \$1,000,000, each state to appropriate \$100,000 a year until the whole sum necessary for the work has been thus jointly provided. Mr. Campbell and governor Brumbaugh are in constant communication concerning the freeing of the sixteen toll bridges that span the Delaware between Trenton

and the Water Gap regions. Their determination is to free one or two or more bridges immediately after the entire \$400,000 is available for use. Negotiations are now pending between the Joint Free Bridge Commission and owners of the toll bridges, looking to the fixing of prices for the structures so that New Jersey and Pennsylvania may acquire them through amicable dealings. If the bridges cannot be acquired in this way, condemnation proceedings will follow. The Pennsylvania Railroad Company has offered to sell its bridge at Bridge street, Trenton, to the states at a sum to be fixed by the commission. All of the bridges to be freed have been carefully examined by appraisers and tentative valuations have been placed upon them.

West Virginia's Good Roads Law.

Charleston, W. Va.—West Virginia's new good roads law will go into effect May 23, by virtue of the act of the 1917 regular session of the legislature. It will become a law without having had the approval of Governor H. D. Hatfield, who was at the head of the state administration at the time of its passage. This act assents to the provisions of an act of Congress relating to post roads, creates a state road fund and makes appropriations for that fund, creates a state road commission and defines its powers. The commission shall consist of two members, one a Democrat, the other a Republican. One must be a practical civil engineer and the other of known successful business qualifications. Each shall be appointed to serve from June 1, 1917, one for a period of two and the other for four years. The power of appointing assistants and fixing their compensation rests with the commission, the salary not to be in excess of the amount appropriated for the purpose by the legislature. County courts demanding of the commission service of any assistant or agent must pay the expenses incident to the service performed. The commission shall promulgate rules and regulations for the guidance of the county roads engineers, all of which must be compatible with the general statutes. Headquarters of the commission shall be in Charleston, and it shall be the duty of the commission to analyze the materials used in the construction of all class "A" roads, and it may be called upon by any county court to make analysis of the materials used in class "B" roads as well. Class "A" roads may be "main county," "federal aid" or "state aid" roads. Class "B" roads include those known as district roads. The method of establishing the main county court roads calls for a map prepared by the road department showing a suggested state wide system of inter-county roads. The respective county courts are to designate two or more main thoroughfares extending through the counties to the border lines. The court's designation of such routes may be approved or rejected by the commission. If a county court refuses or fail to comply with the provisions of the act, the county in which refusal is made shall not participate in the distribution of the federal or state aid funds. In the location and establishment of main county roads, the county court shall have the power to exercise the right of eminent domain for condemnation of rights of way.

In addition to the general county and district levies for road purposes, the county court shall lay a county road levy not to exceed 25 cents on each \$100 valuation of all taxable property in the county, and the proceeds of this levy shall be known as the "county road fund." It shall be expended only for the improvement and maintenance of main county roads and its bridges. The expenditures shall be under direction of the county court except where state or federal aid.

is extended, and then they shall be under the direction of the commission.

A state road fund is provided by the act. This shall consist of the net proceeds of all state license taxes imposed on automobiles, motor or steam-driven vehicles and the registration fees imposed on chauffeurs on or after Jan. 1, 1917. Appropriations by the legislature or by congress may also become part of this fund.

At the beginning of each fiscal year the commission will apportion to the counties of the state which have complied with the provisions of the law in the establishment of main county roads, and which agree to supplement the apportionment the state fund by a like sum, in proportion to the number of miles of this road approved by the commission.

Provision is made by the act for the laying of additional levies when the various road funds are inadequate.

The validity of bond issues made prior to the time the new law goes into effect will not be questioned by reason of the act, and the money derived from bond issues made prior to its enactment shall be expended as originally stipulated under the conditions of the issues.

For the creation of a district road fund the county court, under this law shall lay a levy not exceeding fifteen cents on the \$100 valuation of all taxable property. This fund shall be used in the building of improvements of district roads. In addition to this and the other levies prescribed, the county court may in event of flood or other disaster which destroys roads or bridges, lay a special levy when written approval is had from the state tax commissioner for such to be done.

Provision is made for the appointment for a two-year term of a county road engineer in each county. The appointment is made by the county courts, and the appointees shall be ex-officio road supervisors for their respective counties. These officers shall cooperate with the state road commission. The county engineers, by and with the advice of the county courts, may employ such agents and employees as needed, their pay to be determined by the county courts. The act creates the office of district road patrolman for each magisterial district. Their duty is to keep all roads well drained, fallen timbers removed, landslides corrected, etc. Patrol duty shall include work for six days a week. By a provision of the law all citizens, except in incorporated municipalities may be required to work from one to four days on the public roads or employ substitutes to work in their places for that length of time at their expense.

When contracts are made for road building by the county court it is incumbent on the court to publish in newspapers of the county the names of all persons bidding on the work, together with the itemized amount of the bids, and designate the person to whom the contract was let together with the amount of his bid.

The employment of convict labor from the penitentiary is provided when approval is had from the commission and the board of control of the state will supply the convicts. The warden of the penitentiary shall have suitable quarters constructed, as nearly as possible by convict labor, in which the prisoners shall be housed while working on the roads. County jail prisoners may also be worked.

Thirty-five miles an hour is the maximum speed for any vehicle on the public roads. A registration fee of three dollars is charged any person operating a motor vehicle, and none obtaining a license shall be under fourteen years old. The annual license fee for owners of motor vehicles is ten dollars for each vehicle weighing 2,000 pounds or less and an addition of a \$1.25 for each additional 500 pounds. Fifteen dollars a year is charged manufacturers or dealers in motor vehicles. All license fees shall be paid by the commission to the state to be placed to the credit of state road fund.

Sue Street Railway for Paving.

Yonkers, N. Y.—Leslie Sutherland, vice-president and general manager of the Yonkers Railroad Company, has been served by the corporation counsel's office with a summons in an action to test the validity of an agreement made in 1893, between the city of Yonkers and the railroad company, 24 years ago, under which the railroad company at that time paid a gross sum of \$47,847 for street paving between the tracks, and agreed thereafter to pay into the city treasury 3 per cent of its gross receipts on all franchises in lieu of any further charges for paving against the railroad company. This action is brought to recover, if possible, a sum approximating \$83,000, for street paving, which the city now believes it can recover, following a recent decision of the court of appeals, where a similar action in Queens county was brought against the railroad company, and a decision made that the agreement was invalid. The court also held that the railroad company in that proceeding was entitled to a refund of all moneys paid into the public treasury as a result of the agreement. It is now claimed by the railroad company that if the agreement be set aside, the company is entitled to a refund of the 3 per cent on its gross receipts paid to the city, in accordance with the agreement of 1893, amounting to thousands of dollars. If the railroad company be allowed a re-

fund of the moneys paid to the city with interest, there will be a considerable sum of money to balance against any claim that the city may have against the railroad company for street paving. For many years the city and the railroad have gone along in good faith considering that the agreement was valid, and both sides have complied with its provisions. The recent decision of the court of appeals has raised the question whether it affects the agreement between the city and the Yonkers Railroad Company. Correspondence between assistant corporation counsel Cohen and the company have resulted in a determination to bring suit to clear up the disputed points. The railroad company claims that its offsets against the charges of the city equal the total obligation which the city claims as its due. The corporation counsel's office not only does not admit that point, but claims that there will be a considerable balance due the city as a result of the litigation.

Adjoining State Draws Away Highway Engineers.

Spokane, Wash.—High wages which the state of Idaho is paying for experienced road engineers is causing some confusion in the organization of the Washington state highway department on this side of the state, according to Frank W. Guilbert, secretary of the County Good Roads Association. "Within the last two or three weeks several men have been taken from the highway engineer crews around Spokane," said Mr. Guilbert, "and H. J. Doolittle, the engineer in charge of the district, has found a good deal of difficulty in replacing them. This year Idaho has nearly \$2,000,000 to spend on road construction, and has not had an engineering organization large enough in the past to do the work. Washington is consequently losing quite a lot of men who have been trained in this work, and we may have to ask the highway commission for a general raise in wages for the technical men. In some cases Idaho authorities have offered Washington engineers more than a 50 per cent raise over the figure paid here. It is also noticeable that the bid prices are higher on the jobs recently let around Spokane, and the regular appropriation may not go as far in the construction of roads as it was intended."

Inefficiency in Boston Street Expenditures.

Boston, Mass.—Following an order that "for the purpose of enabling the City Council to make appropriations for street improvements the Finance Commission be requested to investigate how moneys appropriated by way of loan for new streets in the past two years have been expended," the commission has been reviewing the expenditure of the annual loan for making of highways, as appropriated for the years 1915-16 and 1916-17. The other loans made for street construction have been for the improvement of old streets. The annual loan for highways is expended by the street commissioners and the public works department, each acting within the particular duties assigned to it by statute and ordinance. The selection of the streets to be constructed is entirely under the authority of the street commissioners. The commissioners determining the damages to property owners on account of the laying out of streets and accesses such benefits as they deem to be just and equitable. The public works department has jurisdiction over the character of the pavement, the methods of construction, and the work of construction, either by contract or by the day labor force of the department. On the details of expenditure and condition of streets improved, the commission has already reported. "Very few of the streets on which construction was begun in 1916-17 have been completed," say the commission. The commission also considers that council desires information as to "whether the streets selected for laying out by the Street Commissioners have been the most meritorious cases that could have been selected, the awards for damages excessive, the assessments for benefits adequate, and whether the money expended for pavements of proper design and workmanship." It says: "The commission has not the money to make an investigation of even a small proportion of the reasons governing the laying out of the streets in question, or the methods of construction that have been followed. It is not therefore in a position to express opinions

regarding the details of each street. As the work of construction for the streets in the 1915 list has been completed there is no opportunity for an investigation regarding constructional details. From time to time the Finance Commission has made investigation of individual cases of its own initiative, by orders of the City Council, and when its attention has been called to special cases by complaints of interested citizens." Complaints have been received by the Finance Commission from various sources, indicating bad street conditions. The investigations made by the Finance Commission confirm its opinion previously expressed that an undue proportion of the funds annually available are applied to the laying out or construction of streets which are principally of local importance. It is of the opinion that a greater portion of available funds should be used for the improvement of thoroughfares. "The figures for street work," says the commission, "are so involved with sewer construction, abatements, sidewalk assessments and similar matters that it is practically impossible to prepare exact figures. It appears, however, that the total debt created for street purposes, including the laying out and reconstruction of avenues and boulevards, streets about the South Station, and various other streets for which special appropriations have been made, amounts to approximately \$38,500,000. Only a very small fraction of the cost has been returned to the city in the form of assessments for betterments. On the other hand the avenues, South Station work and many of the streets for which special appropriations have been made are works of general public utility which return an indirect benefit to the city. The expenditures from annual loans made under provisions of the laws of 1891 and 1906, under which the street commissioners are now laying out streets, are approximately represented by the following table:

Total expenditure	\$14,600,000
Assessable cost	9,380,000
Betterments assessed	3,240,000
Amount collected	1,650,000
Amount abated.....	788,000
Outstanding	797,000

The above figures indicate that the city may possibly receive 17 per cent of the total cost of these streets if all outstanding assessments are collected, the amount collected plus the amount outstanding being approximately 17 per cent of the total expenditure. Figures compiled by a representative of the Finance Commission on the subject show that the increase in taxable valuation resulting on account of the laying out and construction of new streets is not commensurate with the money expended. Since 1891 approximately \$12,118,000 of the total amount expended has been spent by the city with little if any financial return. The Finance Commission believes the first object for expenditures of loans for street construction should be the improvement of the main thoroughfares of the city, such minor thoroughfares as may be of general public utility, and the streets that will return the expenditure by increased taxes."

SEWERAGE AND SANITATION

Wide Prevalence of Epidemic Cerebrospinal Meningitis.

Washington, D. C.—The United States Public Health Service reports that for several weeks cerebrospinal meningitis has prevailed to an unusual degree in various sections of the country. The occurrence of the disease in epidemic form at this time is considered of particular importance as the disease is one which frequently gains entrance to and spreads in encampments of troops. The principal recognized foci of the disease have been in Philadelphia, Cleveland, St. Louis, Hartford, and Minneapolis. In Minnesota particular attention has been given to the study of the present outbreak by the state department of health, and the information regarding the Minnesota foci is perhaps the most complete. From January 1 to May 2, there occurred in Minneapolis, 103 cases; in St. Paul, 34 cases; and in Duluth, 11 cases. Besides these there were 43 scattered cases throughout the state. The Philadelphia outbreak has undoubtedly been the largest and most im-

portant, and since the first of the year 237 cases have been reported. There have undoubtedly been many unreported cases. Cases numbering 116 have been reported in New York city, but when the population of New York is taken into consideration this number is small compared with those of many municipalities.

Smallpox in Indianapolis.

Indianapolis, Ind.—Reports of an unusual number of cases of smallpox in Indianapolis during the last five weeks, has resulted in a warning issued by the city board of health urging all unvaccinated persons to be vaccinated. A total of forty cases was reported in the city during April and seven cases were reported in the first week this month. Dr. Herman G. Morgan, secretary of the board, said 90 per cent of the cases are among persons who have moved to Indianapolis recently, a great majority of the cases coming from negroes who have moved to Indianapolis from the south.

Boston Cleans Up Bad Housing.

Boston, Mass.—Four hundred persons inhabiting 79 tenements and doing business in twenty-two basement stores have been forced to vacate their apartments by the mandate of the city. The land and buildings had been seized by right of eminent domain in order to wipe out the distressing housing conditions that had been endured in the block bounded by Cross, Salem, Endicott and Stillman streets, North End, for nearly forty years. These poor people had been given until May 1 to leave. Notices from the city law department had been served on their landlords, and there was nothing to do but comply with the demands on time. There had been strong hope among persons interested in this extensive exodus that it would mean a change for the better in living conditions for many of the families. But no such hopeful result will be immediately enjoyed. Because of insufficient funds to take them to houses in the country every family removing from the twenty-five houses will move to other sections of the city just as bad. The tenements that they have vacated will be razed within two months to provide a playground of one-third of an acre. The block itself measures nearly one acre and is one of the largest blocks in the residential portions of the city. Its population had increased from 715 persons in 1888 to 1,500 or more persons at the first of the present years. The population is mostly Polish.

Philippine Health Service Builds Model Houses.

Manila, P. I.—In an effort to overcome the sanitary and economic handicaps of ipa as material for house construction, the director of health of the Philippine Islands and his associates have designed a model house for the islands to be constructed out of a new fireproof material invented by the Philippine health service. This is composed of cement, sand, and ipa, or the husks of rice, reinforced by bamboo. For what is known as a first-class mixture the ingredients are one part each of cement, sand, and ipa. This material is formed into shingles for the roof, and slabs for the sides. The shingles weigh from 1.9 to 2.2 pounds each. The slabs are one-half inch thick, and weigh about 6 pounds per square foot. The first-class mixture will yield, for one barrel of cement, 450 to 500 shingles. The cost of each shingle, excluding labor, is approximately 1½ cents. The cost of each slab, 2 by 6 feet, excluding labor, is from 35 to 40 cents. A house 6 meters by 10 meters (about 20 by 33 feet) requires 2,400 shingles. For the sides and partitions there should be 105 slabs. This allows for some breakage. The shingles and slabs are formed in molds and cured in water after being taken from the molds. This quantity of material is for a house of five rooms—reception and dining room combined, sala or receiving room and sleeping room combined, bedroom proper, kitchen, and bathroom. A porch is added. The windows are double-paneled, with openings which let in the air in two places. For privacy, the lower part may be closed, leaving one opening for ventilation. Efforts have been made for some time to devise material which could be used in the construction of houses that would be cheap enough to be within reach of the poor, and at the same time less combustible than those of nipa, the building material of the poor in the islands. The an-

nual losses by fire resulting from the excessive inflammability of nipa have been a great burden on the people. This new composition, in the judgment of the chief of the fire department of Manila, gives the model house better fire-resisting qualities than those built of hardwood and roofed with iron. He places it in the same class with those built of brick with hardwood frames and tile roofs. The life of the model house is estimated at 25 years. The life of the average nipa house is 10 years, although repairs have to be made every year. The cost of the model house is \$250, practically the same as for nipa construction, including the yearly repairs. In addition to the resistance to fire and the cheapness of this model house, it is far more sanitary than nipa structure. The latter harbors rats and insects, is poorly ventilated as a rule, and rarely has enough room for the separation of the sexes or the isolation of the sick. The model house is provided with the principal sanitary facilities. The Philippine health service has built several of the model houses as samples, and is doing all it can to have the new form of construction displace the old.

City Loses Sewage Plant Contract Suit.

Schenectady, N. Y.—The city of Schenectady must pay \$72,349.21 to Pratt, Reed & Phillips, builders of the municipal sewage disposal plant, according to a decision handed down by the appellate division of the supreme court in Albany. The contract for the plant had been awarded to Pratt, Reed & Phillips by the municipal board of contract and supply. The firm commenced work and after considerable had been done the plans were changed in several particulars. This necessitated extra work by the contractors which, they alleged, amounted to \$119,000. A claim for this amount was presented to the city, but payment was refused. In December, 1915, an action having been brought in the supreme court, a trial was held and judgment was recovered by Pratt, Reed & Phillips. The city of Schenectady then appealed to the appellate division of the supreme court, with the result that the judgment was affirmed.

City Sues County for Disposal Plant Cost.

Canton, O.—The city of Canton has brought suit in common pleas court against the county commissioners for \$10,591.31 claimed as the county's share of the cost of erecting the new sewage disposal plant at Howenstein. Commissioner Bidwell declares that the county will refuse to pay the sum asked and will fight the suit. The city bases its claim on an agreement entered into by a former board of county commissioners with the city, whereby the county was to pay the city \$100 a year for disposing of sewage from the county infirmary and to pay two per cent of the cost if a new sewage disposal plant were erected. The city says in its petition that the new sewage disposal plant cost \$524,556.81 and that two per cent of this sum is \$10,491.31, for which it asks judgment. The city also sues for \$100, the annual payment for service for the infirmary, which the city says was due January 1 and was not paid. "We do not think the county will be compelled to pay this claim," commissioner Bidwell said, "as we do not believe any board has the power to tie the hands of a future board in this way."

WATER SUPPLY

"Raw" Water Used After Main Break.

Lynchburg, Va.—A break in city's water supply line, the most serious since the Pedlar river gravity system was completed several years ago, occurred in a section of the 30-inch cast iron main about a half mile above Albert, in Bedford county and as a result the city was almost confronted with a water famine. In order to avert this condition James river water in the "raw" state was used as an emergency supply until the break in the gravity system was repaired after several days. In order to relieve the situation the water department put the booster pump in operation at the College Hill reservoir. By pumping the water into the standpipe at College Hill many homes, which otherwise would not have been supplied, were given water

service, but before the nature of the break had been ascertained about one-half of the supply in the reservoir had been depleted. Upon learning of the situation in the city water supply, Col. William V. King, president of the board of aldermen, immediately issued a call for a special joint session of the city government bodies and the council water committee was given full authority to act in the emergency and turn into the city water mains James river if found necessary. According to the report of superintendent Randolph the break in the cast iron main occurred about eight miles west of the city. The break occurred between the James river and the Chesapeake and Ohio tracks, at a point where the pipe is below the bed of the river, it being one of the lowest points along the line out of the city. Due to this fact, the pipe was unable to drain itself and in order to make the repairs it was necessary to pump out the water. The Elkan Construction Company, now at work in the city on the Seventh street viaduct, came to the assistance of the water department when informed of the conditions at the break. The construction company tendered the use of a high-powered rotary pump complete with boiler and other equipment, which was loaded on a flat car and shipped to the scene of the break. The construction company also placed an experienced man to operate the pump at the disposal of the city, together with a supply of fuel for the boiler.

Improvements to St. Paul's Waterworks.

St. Paul, Minn.—Improvements destined to make the St. Paul water supply plant one of the most complete in the country have been inspected by the city council at the McCarron's lake station and at the high service reservoir on Dale street. The council inspected the new electrically-driven pumps which are now delivering 16,000,000 gallons daily to the city. The old steam pumps provide an equal amount of water, the city thus being equipped with a double plant in case of enforced shutting down of one unit. The new 8,000,000-gallon tank at McCarron's lake station will provide an emergency unit. In addition to this reservoir, a 30,000,000-gallon tank is being constructed next to the 16,000,000-gallon reservoir on Dale street. Space is reserved for a second unit of 30,000,000 gallons for future use.

Expert Reports on Improved Water Supply.

Watertown, N. Y.—Changes in the plans for the enlargement of the municipal water supply plant involving a saving of more than 50 per cent of the expected cost and at the same time giving the desired results, were proposed by the water board in a resolution presented to the common council and permission was given to alter the plans. The water board submitted a detail report by Allen Hazen, of the engineering firm of Hazen, Whipple & Fuller, which brought out some very important facts in connection with the proposition. Instead of the proposed installation of settling basins, the new scheme provides for a new concrete dam at the head of the present settling basin which will provide a large coagulation basin, and the four new filters will be sufficient. Other additions to the equipment are also suggested, but instead of the cost reaching above \$100,000 as was recently contemplated, it will be less than \$50,000, and will give the relief demanded. The two main reasons for the bad condition of the present supply of water in the city mains are reported as being the overburdening of the plant which does not allow proper settling of the water, and the fact that for the past five years the chemical pollution in the river has steadily increased. The pollution of the water cannot be controlled, but the size of the plant can. By enlarging the capacity of the purifying plant the problem is solved temporarily. The engineers insist that Watertown must sooner or later seek pure water from outside sources, and the report indicates that the north branch of Sandy Creek or Jacobs Creek will be the ultimate source of a gravity supply. It may be several years before this is available. The supply is not clean now, and must be purified. The report held that the present plant would be sufficient were it not for the great waste. The universal adoption of the meter system is the only remedy, and Mr. Hazen stated that one-half the water is now uselessly wasted. "You

should have a new rate schedule with meters and the inequalities eliminated." The figures showed that 200 gallons per day are now being used per capita in the city, where it formerly was 150 gallons. The manufacturing interests use a million gallons a day.

STREET LIGHTING AND POWER

City Plant Cuts Rates.

Ashtabula, O.—A sweeping reduction in electric light rates has been made by the city council. The resolution means that the average consumer will get his service for about 25 per cent. less than under the old rates. Most of the private consumers have been paying at the rate of 7 cents per k. w. h. Under the new rate they will pay 5 cents per k. w. h. The new rates apply to all lighting bills on and after June 1, 1917. In June, 1916, the rate was cut from eight to seven cents. The reduction at that time resulted in so many more new customers being added to the plant that the profits for the year were increased about \$10,000. The new lighting schedule follows: The first 30 k. w., 5 cents per k. w. h.; the next 40, 4½ cents; the next 50, 4½ cents; the next 100, 4½ cents; the next 500, 4 cents; all over 720, 3 cents. The minimum monthly bill will be 50 cents. A discount of five per cent will be allowed on all accounts other than the minimum charge, if the same are settled in full on or before the fifteenth day of the following month. The general power rates are: The first 20 k. w., 4½ cents per k. w. h.; the next 30, 4½ cents; the next 50, 4 cents; all over 100, 3 cents. The minimum monthly bill up to 4 h. p. will be 75 cents per month, and above 4 h. p., 20 cents per h. p. per month. A discount of five per cent will be allowed on all accounts if the same are settled in full on or before the fifteenth of the following month. The wholesale power rates will be: The first 1,000 k. w., 3 cents per k. w. h.; the second 1,000, 2.5 cents; the next 2,000, 2 cents; all over 4,000 k. w., .018 per k. w. h. A discount of two per cent will be allowed on all accounts if the same are settled in full on or before the fifteenth day of the following month. In the special service class will be included all charges for electric current furnished under extraordinary conditions or requiring extraordinary expense or equipment, and the same will be furnished upon such terms as may be agreed upon and approved by the city manager; provided that nothing in the ordinance shall affect the terms and validity of existing special contracts.

City Wins Lower Rates.

Terre Haute, Ind.—The public service commission at Indianapolis has issued an order in the case of the Commercial Club, of Terre Haute, against the Terre Haute, Indianapolis & Eastern Traction Company, which supplies electric light and power to the city of Terre Haute, in which the commission holds with the plaintiff that the light and power rates supplied by the company are unjust, discriminatory and unreasonable. The commission in its order, fixes a total valuation of the company's property used in supplying electric light and power in the city of Terre Haute at \$900,000, and allows a 7 per cent. return on the valuation fixed. The order also requires that the company set aside a depreciation fund of 3 per cent. Noteworthy in connection with the argument presented by the company was its contention that the next year would bring about an increase of \$40,000 in the cost of its fuel. The commission held that the argument was not unreasonable, but that the increase would not be so great if distributed over five years, and that another revision of rates may be made before the expiration of five years, if it develops that the rates permitted in the order are not adequate for taking care of the total annual overhead of \$320,000 permitted by the commission. The rates permitted by the commission for standard electric lights range from 7½ cents gross a kilowatt hour for the first twenty-five k. w. h. a month to 4 cents net for all over 1,000 k. w. h. A discount of one-half cent a k. w. h. on the first fifty k. w. h. consumed in any one month is given if the bills are paid promptly. A minimum charge of 75 cents is permitted

the company. The power rates range from 5½ cents gross to 1½ cents net, with various minimum charges. The special rates include flat rates for customers requiring current only for a limited time, such as street fairs, carnivals and the like. Street lights are to pay an annual rental of \$68.89 with a discount of 10 per cent. for prompt payment. The company is ordered to pay to the state \$2,471.48 as costs in the case. The case was of more than usual interest because the power plant, transmission lines and a great deal of the equipment used in production and transmission are employed jointly for the street and interurban railway purposes and light and power, and there was the consequent difficulty, in deciding on the base rate, in the determination of just what should be apportioned to the light and power service. It is said that only Terre Haute and Indianapolis have had the rates for all public services, that is, water, gas and electricity, fixed by the public service commission.

MOTOR VEHICLES

New Motor Equipment Received.

Seguin, Tex.—The fine new motor fire engine and truck with chemical attachment has been received and given a trial. The apparatus was purchased by the city council from the American-LaFrance Fire Engine Co., of Elmira, N. Y. The engine is of 110 horse power and weighs 8500 pounds. It easily makes more than 40 miles an hour. In a test the engine threw three streams of water about one hundred feet high, two streams over that height, and one stream considerably over the standpipe.

New Machines Do Well Test.

Bisbee, Ariz.—The new American-LaFrance automobile fire engines were given a thorough tryout by the firemen and city officials and fulfilled all qualifications. The first test was throwing a stream from a five hundred foot hose stretched from a hydrant in Tombstone canyon to the top of the hill at the city reservoir. This was done with different nozzles and a satisfactory pressure was shown. Tests equally satisfactory were made down in the canyon and the pumps proved fully up to the specifications. Chief Norton expressed himself as thoroughly satisfied that the pumps will throw a stream high enough to reach the highest point in the city where any fire may occur. Chief Nemeck and captain Guy Stiles of the Douglas fire department and alderman O. E. Jones of the Smelter City came to witness the tests.

Motorization Completed.

Mason City, Ia.—With the addition of the new \$10,000 aerial truck the motorization of the Mason City fire department is complete. The horse-drawn trucks and wagons have now all given way to the motor cars. The new truck was bought from the American-LaFrance Fire Engine Co. of Elmira, N. Y. The truck weighs about eight tons, and with its 72-horsepower self-starting engine, it can attain a speed of 35 miles an hour. From the front lights to the rear tip of the longest extension ladder the truck is about 44 feet in length. In addition to eight ladders of various lengths the car is equipped with a complete set of fire fighting equipment and an aerial nozzle to be attached to the extension ladder and raised at the same time. Two hundred and fifty feet is the total ladder length carried by the truck. The city's fire-fighting apparatus now consists of the new aerial truck, two first-class motor fire engines and a motor pilot car.

GOVERNMENT AND FINANCE

Iowa Legislation for Cities.

Des Moines, Ia.—The following measures which affect cities have been signed by governor Harding: Starzinger—Authorizing cities over 50,000 to levy a special tax for bathing beaches, swimming pools, ice rinks and dance pavilions in connection with parks. Wilson—Making laws providing for police and fire commissioners apply to towns of 8,000 or over instead of 20,000. Tucker—Authorizing city or town warrant to be drawn for as much as \$1,000. Shortess—Making law for assessment of cost of flood protection apply to all cities. Andre—Authorizing the assess-

ment of cost of sewer outlets and purifying plants as a part of the system of sanitary sewers. Coakley—Requiring cities to establish and maintain comfort stations. Lindly—Requiring screens to prevent fish entering pumping station or plant. Horschen—Authorizing special charter cities to adopt the city manager plan of government. Evans—Limiting the amount of interest that may be paid annually on bonds issued for purchase of parks. Evans—Limiting indebtedness of cities and towns and providing indebtedness for public utilities shall be counted against the limitation for general purposes. Starzinger—Permitting the issuance of bonds by cities for the purchase of real estate for period not to exceed fifty years. Weaver—Authorizing cities to establish community center houses with adjacent recreation grounds. Shortess—Authorizing cities and towns to transfer funds from one fund to another on unanimous vote of council and approval of district court. Larson—Permitting cities under 3,000 to fix fire fund levy at three mills and towns at two mills. Elwood—Making the law permitting cities to levy a special tax for fire department apply to cities of 3,000 or over. Broxam—Authorizing cities and towns to oil streets, and tax cost thereof to abutting property. Stone—Defining the uses for which city halls may be used.

Test Position of Officials Under Illegal Charter.

Bay City, Ore.—Proceedings to determine whether or not the mayor and other city officials of Bay City were legally elected have been instituted in the supreme court at Salem. Bay City, in 1914, adopted a new charter, and some time ago the court held that certain tax levies made under it were illegal, because the charter had not been legally adopted. The court was silent on the question whether or not it affected the officials of the city, however, and it is now desired to have this question adjudicated.

Tentative Budget for New York City.

New York, N. Y.—Governor Whitman, at Albany, has signed the Foley bill, providing that New York city hereafter shall have a tentative budget. Under the terms of the measure a budget setting forth every expense in items must be prepared and must be ready by Oct. 10 for public discussion. The Board of Estimate and Apportionment on Oct. 20 must file with its secretary a copy of the proposed budget, and after that date no item may be added, nor any item in the budget be increased. Between Oct. 20 and the date of adoption of the budget any item, however, may be decreased or dropped.

Dallas Election Results Upheld.

Dallas, Tex.—The validity of the election held April 4, 1916, involving a number of city charter changes including the provisions under which the public utility franchises were voted April 3, 1917, has been upheld the fifth court of Civil Appeals. Under the specific provisions enacted to prevent delays in the results of elections becoming effective, no writ or error can be taken to the Supreme Court. The contestants may still file an application for a rehearing in the Court of Appeals. Two legal points were involved. One was whether it was necessary for the measures voted upon to carry by a majority of the voting strength of the city, a majority of the total vote cast at the election or a majority of those actually voting on each proposition. The court held a majority of those actually voting on each proposition was sufficient. The other point was whether the printing of franchises on the ballot for a "straw vote" invalidated the ballot. The court held that it did not. The opinion said in this connection: "On the official ballot furnished the voters and used at the election, were printed thereon, following the nine amendments to the city charter, several propositions relating to proposed ordinances granting franchises, one to the street railway company, consolidated, and the other for the grant of a franchise to the electric light company; also a proposition for the consolidation of the street railway companies. We apprehend the motive that actuated the city council in placing said matters upon the ticket was to ascertain the will of the people in reference to same, so if their adoption came before the council they could

act in relation thereto and in accord with the will of the people. No other end could possibly be subserved as the printing of said matter on the ballots had no binding force on the council or people. It is insisted by appellant that 'the printed matter appearing on said ballot with reference to the proposed franchises was placed thereon with intent to deceive and defraud the voters into voting for the charter amendment embraced in the first proposition, for that the board of city commissioners did not intend to grant the franchises proposed, but to use the authority given by the adoption of first proposition in the grant of entirely different franchises, as shown by subsequent events of which this court has judicial knowledge.' The people had the opportunity before the election to examine and understand what was contained therein and were evidently not misled by the ballot. Nine propositions were voted upon in the election. One of these, providing that the limit of bonded indebtedness might be increased, was defeated at the polls. The other propositions which carried were: Charter amendments permitting the issuance of indeterminate franchises with municipal supervision and rate fixing; amending provisions relating to street paving, permitting the city to assess the entire cost of paving against abutting property and pay for the intersections; permitting pensions for the police and fire departments; increasing the park bond limit from \$500,000 to \$750,000; authorizing limitation of business districts; providing a change in the method of naming the city auditor; permitting segregation of races and changing saloon limits, thus taking liquor from the state fair grounds. A previous decision in the Fifth Court of Civil Appeals has held that the power to limit business structures from prescribed districts could be maintained under the old charter so that loss of the contest by the city would not have affected that. A decision against the city would have removed the authority under which the public utility franchises were voted in the election last April and thus have made them void."

City Tax for University Campus Upheld.

Lincoln, Neb.—Right of the city of Lincoln to levy an annual tax as a contribution to the fund to extend the city campus of the University of Nebraska has been upheld by a decision of the state supreme court. The court held that the levy was "for corporate purposes, and therefore within the scope of the city," and that "the advisability of conferring such power on the city is a question for the legislature, not for the courts." The legislature granted the city the power to make the levy. The court declares that the fact that some part of the city may be benefited more than others does not render the tax invalid.

Test Licensing of Out-of-Town Merchants.

Boston, Mass.—With the intention of trying out in the courts the question whether under the laws of Massachusetts a license is necessary in cases where merchants from the large cities send to smaller places exhibits of goods from which orders are to be taken for future delivery, Boston and New York merchants have filed a bill in equity. The document, filed in the Superior court for Suffolk county, is in the name of very well-known Boston and New York department stores. It is understood also that there is a conflict of opinion as to the necessity of a license in cases of the kind under consideration, between the Northampton police and Thure Hanson, Massachusetts sealer of weights and measures, under whose jurisdiction comes enforcement of the law in question.

Test Legality of County Commission Rule.

Newport, Ky.—Alleging that the question of adopting commission government for Campbell county was not voted upon at an election at which county officers were voted for, has been entered in Campbell circuit court against county judge Edward Boltz to test the legality of the new form of government. The complainant asks the court to restrain judge Boltz from calling for an election of three county commissioners. The court also is asked to set aside an order made by judge Boltz dividing the county into three districts. Commission government for Campbell county was adopted by an overwhelming plurality at the election held in November, 1916. Several years ago

the same question was voted favorably upon by the Campbell county voters, and after three commissioners were elected a suit was filed in the local courts and the new form of government knocked out because it had not been properly advertised.

TRAFFIC AND TRANSPORTATION

Street Railway Operated by Gasoline.

Panama, N. Y.—Gasoline as the motive power for a street railroad is to be tried by the Panama Traction Company on a new line to be built between Panama and Asheville, in Chautauqua County. In granting the company permission to do this the up-State Public Service Commission at Albany said: "The method of operation proposed, while still in a somewhat experimental stage, seems economical and well adapted for light traffic. If railroad facilities can be afforded to the region by any method reasonably promising financial success, the effort to do so should be encouraged." If the venture does succeed the commission believes it will result in the building of many lines in isolated sections now closed to railroad accommodations.

Fine New Elevated Railroad Opened.

New York, N. Y.—Operation of the new Corona elevated railroad, which extends from the Queensboro Bridge plaza to Alburtis avenue, Corona, a distance of over four miles, has now been inaugurated. For the time being operation will be had in connection with the Queensboro subway. As soon as the connection of the Second avenue, Manhattan, elevated line over the Queensboro Bridge is completed, operation of elevated railroad trains will be started. There are two express stations and nine local stations on the Corona line, exclusive of the big Queensboro plaza station through which pass four express tracks and two local tracks, accommodating at one time four ten-car trains, the latter of the 67-foot type bought for dual system operation by the Brooklyn company. Eventually, it is expected, the Corona line will be connected with tracks of the Long Island Railroad, reaching to Whitestone and Little Neck, the lease of which by the city is now under consideration. The contract for the construction of the principal portion of the Corona line was awarded on February 7, 1913, to the E. E. Smith Contracting Company, at \$2,063,588. However, the cost of the line reached \$3,300,000—station finish, track installation and the expense of carrying the line over the Sunnyside yard of the Long Island Railroad bringing the total up to that figure. The elevated structure over the Queens boulevard is of orna-

mental concrete and is said to be the "finest piece of elevated railroad construction in America." The work has been visited by engineers from all parts of the world, who praised its structural qualities and architectural beauty. The construction work of the Corona line was done under the supervision of the engineers of the public service commission, of which Daniel L. Turner is chief engineer, and Robert Ridgway, engineer of subway construction. The actual field work has been in immediate charge of division engineer John H. Myers, with whom have been associated in various executive engineering capacities during the construction work H. J. Alexander, Henry Manley, Jr., C. W. McInenly and C. D. Searle, together with a number of other engineers of the commission's staff. Details of the completion of track construction and station finish have been in charge of division engineers Robert H. Jacobs and Jasper T. Kane.

MISCELLANEOUS

Shade Trees in Detroit.

Detroit, Mich.—In urging the appropriation of \$98,415 for street tree work, the Department of Parks and Boulevards has published a leaflet addressed to the Mayor, the Common Council and the people, entitled "Detroit Shade Trees, a Municipal Asset." According to the leaflet Detroit has 405,500 shade trees in its parks, boulevards, playgrounds and streets. They are divided as follows: Belle Isle, 110,000; Palmer park, 35,000; boulevards, 6,200; small parks, 3,700, and street trees, 250,000. Their total value is \$10,137,000. And yet, according to statistics kept by the forestry division of the Department of Parks and Boulevards of the city, Detroit loses more than 5,000 shade trees every year from one cause or another. Less than 1,200 of these are being replaced by property owners or by the city. By the ravage of insects 3,000 are lost each year on the streets alone. Within the last four years, on the streets, exclusive of parks and boulevards, 12,291 trees have died. Their value as live, healthy trees was no less than \$285,000. According to the leaflet Detroit in 1916 paid for the preservation of its shade trees only three and one-tenth cents of the \$18.25 which every tax-paying citizen paid into the city treasury on every \$1,000 worth of taxable property. As compared with other cities Detroit, with 250,000 trees, spent in 1916 only \$23,000 on its street trees, whereas Philadelphia, with 127,000 trees, spent \$20,000, or 16 cents per tree; Washington, D. C., with 101,900 trees, spent \$43,000, or 42 cents per tree; Syracuse, N. Y., with 45,000 trees, spent \$7,000, or 15 cents per tree. Washington, Syracuse and Detroit have one tree to every

NEW
CORONA
ELEVATED
RAPID
TRANSIT
RAILWAY
IN NEW YORK
RECENTLY
OPENED.

Courtesy
Brooklyn (N. Y.)
Daily Eagle.



three people, whereas Philadelphia has only one tree to every 20 people; Hartford, Conn., has only one tree to every 10 people. Urging on the people the necessity of preserving their trees, the officials of the Department of Parks and Boulevards have reported as follows: "A recent inspection of street, boulevard and park trees showed that more than 89 per cent. were seriously infested by 14 distinct and dangerous species of insects which if allowed to go unchecked will destroy every shade tree they attack. Of our street trees, which number 250,000, 233,000 are seriously infested with these leaf-eating, sap-sucking insects and are rapidly going the way of the 12,000 lost during the last four years. It would cost less than \$30,000 a year for the protection of all street trees, and yet all previous annual appropriations for their care and maintenance have not permitted this department to spend more than \$5,000 annually, one-sixth of what is actually needed to fight these destructive insects. Detroit's loss from neglect, improper pruning and repairing is more than 1,500 shade trees a year, representing a loss in money value of over \$40,000. A shade tree should be pruned at the very least every five years, better every three years under continuation of present annual appropriations, ears under continuation of present annual appropriations, and this does not take into consideration the recently increased area of 60 per cent. In 1916 the department of parks and boulevards pruned 16,371 trees, less than one-third of what was actually necessary. They spent \$8,531.60 for this work, when \$30,000 was needed and should be available to the department this coming year."

City-Owned Exposition.

Houston, Tex.—A new department of the city government, created by the council, has now taken charge of Houston's permanent exposition. It consists of a board of seven commissioners appointed by Mayor Campbell. The board members will serve for a period of two years and without compensation. This board may appoint a secretary, not a member, who will receive a salary, the size of which is to be fixed by the city council. The president of the exposition board is to be the executive officer of the department. The city engineer and city architect will be the engineer and architect, respectively, of the exposition board, and will perform such engineering or architectural work as may be necessary. The board, it is provided, "shall have possession and control of the exposition grounds," already acquired, and "all other grounds hereafter acquired in connection with said land shall be municipally owned, and its name shall be 'Houston's Permanent Exposition.' The land used in connection therewith, when not in use for exposition purposes, shall be used for park purposes." To the exposition board is given the power "to make and enforce regulations regarding the use and control of the exposition buildings and grounds and to supervise and superintend the laying out of the grounds, the construction of exposition buildings thereon, and any and all improvements contemplated or designed to adapt grounds to the use and enjoyment thereof by the public for both park and exposition purposes. . . . To fix, regulate and collect rates and charges for the use of space in exposition buildings and for the use of any boats or pleasure craft owned and operated for purposes of amusement, either by the city or leased by the city to private individuals or corporations, or owned by private individuals or corporations and operated within said exposition grounds under agreement with the city." It is stipulated that "no moneys shall be expended, or obligation to expend same incurred on account of any of the matters referred to herein, without prior approval of the city council." All moneys received or collected from or arising out of the use or operation of the grounds, buildings, appliances or utilities will be deposited in the city treasury, "the fund to be known as the 'exposition revenue fund' and shall be kept separate from other moneys of the city." Such moneys, it is specified, "will be used for the necessary expenses of conducting the exposition department and the operation of the exposition proper, for the acquisition or construction of buildings or equipments and any other improvements, the purchase of any lands necessary, and the payment, as provided, of installments of the interest or principal, or interest and principal coming due on outstanding exposition bonds."

LEGAL NEWS

A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

Street Widening—Discretion of Municipal Officers.

(Md.) Exercise of discretion by municipal officers, as in widening a street, will not be interfered with, except in cases amounting to fraud or bad faith.—City of Baltimore v. Williams, 99 A. 362.

Maintaining Receptacles for Refuse—Neglect to Provide.

(Ga.) The violation of a sanitary ordinance requiring property owners to maintain receptacles for refuse, and papers, etc., is not necessarily negligence per se as to travelers on highway, though it may as a matter of fact amount to negligence.—Bowen v. Smith-Hall Grocery Co., 91 S. E. 32.

Defect in Street—Injury to One Drunk—Liability of City.

(Md. App.) A traveler, injured through a defect in a street, will not be held guilty of contributory negligence as matter of law, because drunk; but his conduct is to be judged by the rule of care exacted of an ordinarily careful and prudent sober person in his situation.—Chance v. City of St. Joseph, 190 S. W. 24.

Failure to Use Established Crossing—Contributory Negligence.

(Pa.) A pedestrian who without reasonable excuse fails to use an established crossing takes upon himself the risk of every danger arising out of municipal neglect that might otherwise have been avoided.—Watts v. Borough of Plymouth, 99 A. 470.

Delay in Paving—Invalidation of Assessment.

(Mich.) The mere fact that a paving contract required a street railway company to pave between its rails, and that the city permitted it to delay after paving outside the rails, on agreement to pave later, would not invalidate the special assessment for the paving laid.—City of Kalamazoo v. Perrin, 160 N. W. 653.

Building Regulation—Police Power.

(Tex. Civ. App.) In suit to compel issuance of building permit and for injunction restraining interference with erection of storehouse, despite building ordinance regulating erection of business buildings in residence districts, testimony that suburban stores detract from comfort and destroy value of home held admissible.—Spann v. City of Dallas, 189 S. W. 999.

Opening Streets—Permits and Guarantees.

(Ala. App.) Municipal corporation, as prerequisite to issuance of license or permit to artisans who may be called upon to make excavations disturbing surface of streets, may require street to be restored to natural and safe condition, and that work be guaranteed for reasonable time.—Mobile Light & R. Co. v. S. D. Copeland & Son, 73 So. 131.

Rights of Riparian Owner in Tidal Waters.

(N. Y. Supp.) The rule that the riparian owner on a stream has a property right in domestic and industrial use of waters of which not even the Legislature can authorize a violation, and which municipalities cannot impair by disposal of sewage, does not apply to tidal waters in creeks tributary to ocean bays.—Seaman v. City of New York, 161 N. Y. S. 1002.

State and Municipal Officers.

(Mo.) Under Rev. St. 1899, §§ 6189, 6190, 6192, 6193, a police detective is both a municipal and state officer within Const. art. 14, § 8, forbidding increase of compensation of state or municipal officers during their term.—State ex rel Truman v. Jost, 191 S. W. 38.

Fixing Salaries—Power of Board of Estimate.

(N. Y.) Board of Estimate of city of New York could not fix lower salaries for chief searcher and examiner, etc., appointed by register of county of Kings pursuant to Laws 1913, c. 776, despite Greater New York Charter, § 56, as amended by Laws 1902, c. 435.—People ex rel. O'Laughlin v. Prendergast, 114 N. E. 860. 219 N. Y. 377.

NEWS OF THE SOCIETIES

Calendar of Meetings.

May 21-24.—AMERICAN SOCIETY OF MECHANICAL ENGINEERS. Spring meeting, Cincinnati, O. Secretary, Calvin W. Rice, 29 West 39th Street, New York, N. Y.

May 28, 29.—CIVIC IMPROVEMENT LEAGUE OF CANADA. Annual conference, Winnipeg, Man. Acting Secretary, Thomas Adams, Commission of conservation, Ottawa, Ont.

May 29.—ONTARIO HEALTH OFFICERS' ASSOCIATION. Annual meeting, Toronto, Ont. Secretary, J. W. S. McCullough, chief officer of health of Ontario, Toronto.

June 1-4.—AMERICAN ASSOCIATION OF MEDICAL MILK COMMISSIONERS. Annual meeting, Brooklyn, N. Y. Secretary, Dr. Otto F. Geier, Ortiz Building, Cincinnati, O.

June 4-5.—AMERICAN ACADEMY OF MEDICINE. Annual meeting, New York City. Secretary, Dr. Thomas W. Grayson, 1101 Westinghouse Building, Pittsburgh, Pa.

June 4-8.—AMERICAN MEDICAL ASSOCIATION. Annual meeting, New York City. Secretary, Frederick R. Green, 535 North Dearborn Street, Chicago, Ill.

June 6-13.—INTERNATIONAL ASSOCIATION OF POLICEWOMEN. Annual meeting, Pittsburgh, Pa. Secretary, Mrs. G. Sharrot, 40 Court House, Minneapolis, Minn.

June 6-13.—NATIONAL CONFERENCE OF CHARITIES AND CORRECTIONS, Pittsburgh, Pa. Secretary, Wm. T. Cross, 115 Plymouth Court, Chicago, Ill.

June 11.—NEW YORK STATE CONFERENCE OF MAYORS AND OTHER CITY OFFICIALS. Annual conference, Buffalo, N. Y. Secretary, W. P. Capes, 25 Washington Ave., Albany, N. Y.

June 11-14.—SOUTHWESTERN WATERWORKS ASSOCIATION. Annual convention, Topeka, Kan. Secretary, E. L. Fulker, Waco, Tex.

June 12-15.—AMERICAN SOCIETY OF CIVIL ENGINEERS. Annual convention, Minneapolis and St. Paul, Minn. Secretary, Charles Warren Hunt, 220 West 57th Street, New York, N. Y.

June 13-15.—NATIONAL ASSEMBLY OF CIVIL SERVICE COMMISSIONS. Annual meeting, Boston, Mass. Secretary, John T. Doyle, 1724 F St., N. W., Washington, D. C.

June 13-15.—MARYLAND STATE FIREMEN'S ASSOCIATION. Twenty-fifth annual convention, Cumberland, Md. Secretary, William Weagly, Westminster, Md.

June 20-22.—AMERICAN INSTITUTE OF CHEMICAL ENGINEERS. Semi-annual meeting, Buffalo, N. Y. Secretary, J. C. Olsen, Cooper Union, New York, N. Y.

June 25-27.—LEAGUE OF LOUISIANA MUNICIPALITIES. Annual convention, New Iberia, La. Secretary, Mayor Joseph B. Elam, Mansfield, La.

June 26-30.—AMERICAN SOCIETY FOR TESTING MATERIALS. Annual meeting, Atlantic City, N. J.

July 12, 13.—LEAGUE OF MICHIGAN MUNICIPALITIES. Annual convention, Grand Rapids, Mich. Secretary, Charles A. Sink, Ann Arbor, Mich.

July 30-Aug. 3.—SOUTHERN SOCIOLOGICAL CONGRESS. Annual meeting, Blue Ridge, N. C. Secretary, J. E. McCulloch, 508 McLachlen Bldg., Washington, D. C.

Sept. 11-14.—NEW ENGLAND WATERWORKS ASSOCIATION. Annual convention, Hartford, Conn. Secretary, Willard Kent, 715 Tremont Temple, Boston, Mass.

Oct. 16-19.—INTERNATIONAL ASSOCIATION OF FIRE ENGINEERS. Annual convention, Jacksonville, Fla. Secretary, Chief James McFall, Roanoke, Va.

Oct. 17-18.—LEAGUE OF MINNESOTA MUNICIPALITIES. Fifth annual convention, St. Cloud, Minn. Secretary-treasurer, Richard R. Price, University of Minnesota, Minneapolis.

Nov. 12-16.—AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS. Annual convention, New Orleans, La. Secretary, Charles C. Brown, 469 Transportation Building, Chicago, Ill.

Nov. 20-23.—PLAYGROUND AND RECREATION ASSOCIATION OF AMERICA. Recreation Congress, Milwaukee, Wis. Secretary, H. S. Braucher, 1 Madison Ave., New York, N. Y.

National Electric Light Association.

The National Electric Light Association's special meeting, which was held in New York, to discuss the problems arising out of the war and the action which the members should take to assist the Government, appointed a committee to confer with the Council of National Defense in Washington on existing and future problems, with power to make recommendations to the companies as to their course of action. The members of the committee are John W. Lieb, of New York; Samuel Insull, of Chicago; H. A. Wagner, of Baltimore; J. B. McCall, of Philadelphia, and C. L. Edgar, of Boston.

New officers were elected for the coming year as follows: President, John W. Lieb; first vice-president, W. F. Wells, of Brooklyn; second vice-president, R. H. Ballard, of Los Angeles, Cal.; third vice-president, Samuel Scovil, of Cleveland; fourth vice-president, D. H. McDougall, of Toronto, and treasurer, W. H. Atkins, of Boston.

National Police Chiefs' Association.

The annual convention of Police Chiefs of the United States, which usually takes place in the early part of June, will this year be omitted entirely. This conclusion has been reached by the executive committee of the National Police Chiefs Association.

The convention was scheduled this year for Kansas City. The decision is the result of the present national crisis. It is believed that most police chiefs will find it impossible to leave their posts at this time.

National Parks Highway Association.

W. G. Edens, of Chicago, was re-elected president of the National Parks Highway Association at the third annual convention held at Spokane April 27. C. L. Morris, of Seattle, was elected first vice-president; Oscar Rohn, of Butte, second vice-president; Frank W. Gilbert, of Spokane, secretary, and Earle P. Broune, Coeur d'Alene, treasurer.

The delegates voted to include Oregon in the sisterhood of states sponsoring the national parks highway. This action includes the extension of the highway from Puget Sound, the present western terminus, to take in the Pacific highway, from Blaine to Portland, and the Columbia highway, east from Portland along the Columbia River. Oregon will contribute to

the funds of the association this year and will enter upon full membership next year when the highways in which it is directly interested are included in the new maps.

Members of the executive committee elected are C. L. Morris, D. D. A. Outcault and F. W. Gilbert, Washington; R. B. Hines, J. V. Hawkins, W. R. Miller, Idaho; D. D. Richards, W. H. Griffin, Oscar Rohn, Montana; F. W. Turner, J. P. Hardy, H. C. Flint, North Dakota; J. F. Elwell, E. L. de Lestry, Alva Eastman, Minnesota; F. E. Turneaure, James R. Kinsloe, H. A. Apple, Wisconsin; W. G. Edens, Leo A. Peil, M. F. Miller, Illinois; John S. Beall, Frank Branch Riler, J. H. Parker, Oregon.

League of California Municipalities.

The Annual Public Welfare Exposition of municipal supplies, street and road-making machinery will be held this year at Santa Rosa, September 24 to September 29, 1917, in connection with the Twentieth Annual Convention of the League of California Municipalities.

New York Federation of Fire Chiefs.

Present indications are that the New York State Federation of Fire Chiefs will forego their annual convention owing to the war situation. The chiefs believe that conditions require their strict attention to duty and that the convention should be postponed until more peaceful times.

Information to this effect has been received from Secretary Henry T. Yates, of the state association. He states there is an almost unanimous sentiment in favor of abandoning the state convention as the chiefs believe they should not leave home for any considerable period.

While the question of giving up the convention has not been finally settled, it seems that there will be no convention. The convention was to have been held in Watertown, N. Y., about the second week of June.

New York State Conference of Mayors and Other City Officials.

The following is the tentative program for the Buffalo Conference, which will be held on June 12, 13 and 14, with headquarters at the Hotel Iroquois.

The first session will begin on Tuesday, June 12, at 1:30 p.m., Walter R. Stone, mayor of Syracuse, presiding.

Invocation, Rev. Clinton L. Scott.

Address of welcome, Louis P. Fuhrman, mayor of Buffalo.

Response and president's address, Cornelius F. Burns, mayor of Troy.

"The State and the Municipality," Charles S. Whitman (invited), Governor of New York State.

Reports of committees and officers:

Treasurer, Bureau Council, Advisory Committee, Advisory Committee of City Planning Experts, Committee on Municipal Accounting and Budget Making, Committee on Standard Units, Committee on Education, Committee on Taxation and Assessment, Special Committee on Food.

Announcements of convention committees, introduction of resolutions, general announcements.

The second session will be held at 8 p.m., Abram Zoller, mayor of Little Falls, presiding.

"Paving Contracts," W. Earl Weller, city engineer, Binghamton.

"State Sources of Revenue vs. Municipal Sources of Revenue by Indirect Taxation," Senator Henry M. Sage, chairman, State Senate Finance Committee.

"State and Municipal Powers," Senator Elon R. Brown, temporary president, State Senate, Watertown.

The third session will open on Wednesday, June 13, at 10:30 a.m., F. M. Thompson, mayor of White Plains, presiding.

"Street Lighting Districts of Assessment," W. Thomas Wooley, city engineer, Schenectady, N. Y.; discussion.

"Assessment Methods in Buffalo," Charles B. Hill, commissioner of finance, Buffalo, N. Y.; discussion.

The fourth session is scheduled for 2:15 p.m.

"Public Administrative Problems in Empire State Cities," Clement J. Driscoll, expert on Administration of Police and Fire Departments, New York Bureau of Municipal Research, New York City.

"Traffic Regulations in Cities," Franklin Lord, second deputy police commissioner, New York City. (Motion pictures showing how New York's Police Department regulates traffic at congested points.)

It is planned to invite to this session all members of the Police Departments of Buffalo, Niagara Falls, Lockport, Lackawanna, Tonawanda and North

(Continued on page 706.)

PROBLEMS CITIES ARE STUDYING WITH EXPERTS

Acadia County, Crowley, La., is to spend about \$50,000 on HIGHWAY construction. The engineer for the work is H. W. Bell, Laurel, Miss.

In making SEWER extensions, Merritton, Ont., has the engineering services of F. N. Rutherford, 24 Queen street, St. Catherines, Ont.

A DAM is to be constructed by Ft. Scott, Kan., plans being in preparation by Black & Veatch, 507 Interstate building, Kansas City, Mo.

Harrisburg, Pa., is planning a SEWAGE DISPOSAL PLANT and has retained James H. Fuertes, 140 Nassau street, New York, N. Y., as consulting engineer.

In making STREET IMPROVEMENTS, Woodruff Place, Ind., has the engineering services of H. A. Moore, 307 Indiana Trust building, Indianapolis, Ind.

The borough of Narbeth, Pa., proposes a number of improvements, including PAVEMENTS and SEWERS. The engineers are Albright & Mebus, Land Title building, Philadelphia, Pa.

Sprague, Wash., is to make a number of STREET IMPROVEMENTS. The engineers are Sawyer Bros., Lindelle building, Spokane, Wash., and White building, Seattle, Wash.

Dayton, O., is to issue bonds amounting to \$400,000 for improvements to its WATER SUPPLY SYSTEM, including reservoir, pump and wells. The consulting engineers for the work are Metcalf & Eddy, 14 Beacon street, Boston, Mass.

Ada, Okla., is considering the improvement of its WATER and WATER POWER SYSTEMS. The Benham Engineering Company, Colcord building, Oklahoma City, Okla., has been retained in a consulting engineering capacity.

Birmingham, Ala., is considering the purchase of the property of the local WATERWORKS company. To determine valuation and conditions of the purchase the city has retained as its expert Nicholas S. Hill, Jr., 100 William street, New York, N. Y., to confer with the company experts, Biggs & Freer.

Norfolk, Va., is building a MUNICIPAL PIER. The consulting engineer for the project is B. F. Cresson, Jr., 50 Church street, New York, N. Y.

A SEWER SYSTEM is to be constructed by Bishopville, S. C., plans and specifications having been prepared by the engineers, the J. B. McCrary Co., Atlanta, Ga.

Ventnor City, N. J., is paving a number of STREETS. The engineer for the work is W. J. Risley, Guarantee Trust building, Atlantic City, N. J.

Sanitary SEWERS are to be constructed by Matamoras, O. The engineer for the work is W. P. Mason, 460 German Bank Building, Marietta, O.

An outfall SEWER is proposed for Upland, Cal. The engineers are Olmsted & Gillelen, Hollingsworth building, Los Angeles, Cal.

Brantford, Ont., is installing new equipment in its WATERWORKS. The engineers are Chipman & Power, Mail building, Toronto, Ont.

An ELECTRIC LIGHT PLANT is to be constructed by Toronto, Kan. The consulting engineers, W. B. Rollins & Co., 209 Railway Exchange building, Kansas City, Mo., are drawing plans.

SEWERS and a SEWAGE DISPOSAL PLANT are to be built by New Iberia, La., from plans and specifications prepared by Xavier A. Kramer, Magnolia, Miss.

Canton, O., is studying the possible methods of pumping for its well WATER SUPPLY and has retained Charles B. Burdick, of the firm of Alvord & Burdick, Hartford building, Chicago, Ill., to act as consulting engineer.

The city of Elmira, N. Y., has to decide whether to allow the local gas company to increase its RATES and furnish mixed natural and artificial gas or to follow the request of the natural gas producing company and continue the use of natural gas. The city has consulted as expert Alfred E. Forstall, president of the American Gas Institute, New York, N. Y.

PERSONALS

State Highway Commissioner Black of Pennsylvania has announced the appointment of Ralph Volpe to be road superintendent of Huntingdon County, succeeding D. A. McCloskey, who has been appointed chief of construction at Hollidaysburg. Mr. Volpe has been with the Pennsylvania State Highway Department for nearly four years and has risen from rodman to his present position.

Gov. Boyle of Nevada has named as members of the recently authorized board of state highway directors James M. Leonard, of Virginia City, to serve three years; George K. Edler, of Reno, to serve two years, and W. B. Alexander, of Reno, for one year.

Mullen, John H., has been appointed deputy state highway commissioner of Minnesota at a salary of \$3,500.

Pontet, Robert, resigned as chief of police of Great Falls, Mont.

Von Hoene, William F., has been appointed administrative superintendent of the waterworks of Cincinnati, O.

Riggs, Arthur, has been appointed chief of police of Bellingham, Wash.

William E. Kimball, city engineer of Attleboro, Mass., C. E. Jewell, his assistant, and L. J. Ainsworth, construction foreman in the highway department, were killed in an automobile accident May 2.

The following were recently elected in Texas:

Jacksboro—D. R. Sewell, mayor; F. N. Foxhall, waterworks commissioner, and J. R. Lilly, street commissioner, re-elected.

Lamesa—J. R. Lowrie, mayor; J. L. Coffee and E. R. Bainbridge, commissioners.

Arlington—J. W. Millard, mayor; A. A. Smith, O. R. Griffin, Tom Ungles, Jr., Dan Paepke and W. H. Yundt, councilmen.

Meade—S. P. Adams, mayor; Louis Oehler, A. J. Plush, W. S. Gibbons, E. W. Fletcher and F. Fuhr, councilmen.

Mullinville—Chas. Tanner, mayor; W. D. Campbell, O. E. Johnson, J. P. Moore, Wm. Pollock and A. W. Fellers, councilmen.

INDUSTRIAL NEWS

Cast Iron Pipe.—Prices remain the same as last week. Quotations: Chicago—4-inch, class B and heavier, \$58.50; 6-inch, \$55.50. New York—4-inch, class B and heavier, \$58.50; 6-inch, \$55.50. Birmingham—4-inch, class B and heavier, \$53; 6-inch, \$50; class A, \$1 extra.

The Federal Truck Co., Detroit, Mich., announces a new policy which requires dealers to stock repair parts, thus inaugurating greater services to the users of motor trucks. Hereafter, with a view to giving the utmost in service to owners of Federal trucks, it will be a stipulation in Federal dealers' contracts that a complete assortment of service parts must be carried in stock. This, in effect, is intended to make every Federal dealer and distributor a branch of the factory and insures the elimination of unnecessary delays in making repairs to motor trucks. Another feature which will appeal to the owner who strives to get the greater efficiency in haulage equipment, is the establishment of all night repair shifts in most of the Federal service stations. "This is the first time, so far as I know, that truck dealers have been required to carry repair parts," said J. F. Bowman, director of sales.

The Dunn Wire-Cut Lug Brick Co., Conneaut, O., announces that Mr. Guy Ramsey, Assoc. M. Am. Soc. C. E., of Orlando, Florida, has joined its engineering staff and will be division engineer for the southern states, with headquarters at Atlanta, Ga. Mr. Ramsey is a graduate of Hobart College, Geneva, N. Y. He began his engineering career on the Lehigh Valley Railway and subsequently was connected with a number of railroads. After serving as general manager of the Spokane (Wash.) Fire Brick Company and assistant city engineer of Spokane, Mr. Ramsey took up private and consulting engineering practice at Orlando, Fla., later becoming city engineer and highway engineer for Orange, Osceola and Seminole counties. He has had a great deal of highway construction under his direction. The Dunn Wire-Cut Lug Brick Company now has eight engineers on its regular staff.

The Copeland-Inglis Shale Brick Co., Birmingham, Ala., has become a licensee of the **Dunn Wire-Cut Lug Co.**, and will henceforth make wire-cut lug paving brick. This is known as one of the largest and most important paving brick concerns in the south. Mr. Beattie A. Inglis is vice-president and treasurer and Mr. W. Lawton Inglis is secretary.

The Good Roads Company, 14th and Chestnut streets, Kansas City, Mo., which manufactures the Worley-Logan equipment, has published for general distribution an interesting booklet entitled "The Dustless Road." The

harmful effects of street and road dust and of bad roads are convincingly discussed and a strong plea made for street sanitation through oiling, flushing and sprinkling. Well-known authorities on health and on good roads are effectively quoted. All types of Worley-Logan high pressure atomizing road oilers, tar and asphalt spreaders, power flushers and sprinklers are described and the many uses to which they may be put enumerated. The illustrations show clearly the principles of design and construction embodied in the machines and a number of action photographs and road scenes bring home the points made. Letters from city and county officials, civic and commercial and good roads organizations give interesting stories of the success of the equipment on the job. A table giving the amounts of oil and price required for a mile of road of different widths should prove handy.

The Goodyear Tire & Rubber Company, Akron, Ohio, announces the following promotions: C. M. McCreery, formerly assistant manager of the Chicago district, is now special manufacturers' representative for that district; W. S. Boone, formerly supervisor of city sales in Philadelphia, is now special manufacturers' representative for the New York district; G. H. Barnmore has been transferred from branch manager at Milwaukee, Wis., to assistant manager of the Chicago district; A. J. Sears, formerly branch manager at Sioux City, Iowa, succeeds Mr. Barnmore as branch manager at Milwaukee; W. A. Ziegler has been promoted from city salesman at Milwaukee to branch manager at Sioux City, Iowa.

The Waterloo Cement Machinery Corporation, Waterloo, Ia., has published an excellently gotten-up catalog describing its line of "Wonder" equipment which includes concrete mixers, builders' hoists, trench pumps, back-filers and other contractors' machinery. The details of design and construction which have made the outfits so effective and popular in the field are interesting and lucidly explained and fully illustrated. A number of letters from contractors and city officials who have used wonder "Double Quick" back fillers are of particular interest. For instance, Michael McElligott, 1408 Main street, Evanston, Ill., writes of a job at Deerfield, Ill.: "The surface was very low and soggy. We encountered a very sticky clay and the filling would have been impracticable for a team. We averaged 350 feet per day with an operator at \$3.00 a day and two laborers at \$2.50 each. The total cost per foot, including gasoline, etc., figured .024 cents per foot." On another job, at Glencoe, Ill., where 13 miles of sewer were installed under very difficult conditions, "the material handled was hard yellow clay, well granulated by the ditching machine. With an operator paid \$3.00, and two laborers paid \$2.50 each, we averaged

600 feet per ten-hour day. Total cost per foot, including gasoline, etc, figured .014 cents. The best a team could have done would make the cost .053 cents per foot. That figure does not include the replacing of the walk, which would have been damaged by a heavy team." H. C. Wright, superintendent, division of water, Dayton, O., writes, "We can fill 100 feet of trench 5 feet deep with two men in an hour, under the worst conditions."

The Kissel Motor Car Co., Hartford, Wis., announces that Mr. Ralph Kaye, specialist in automobile advertising and publicity, and a member of the staff of the Otto J. Koch Advertising Agency, Milwaukee, Wis., under whose supervision the advertising and publicity of the Kissel-Kar has been handled for the past ten years, has assumed charge of the company's advertising and publicity department. The company also announces that Estera-Ruiz & Co., 10 Broadway, New York City, have contracted the agency for Kissel-Kar and trucks in Mexico. A special carload of cars and trucks was shipped this week for the Mexican boundary where they will be reloaded for forwarding to Mexico City. Other new Kissel-Kar agencies recently established are: Williams & Easley, Trinidad, Colo.; Atascadero Mercantile Company, Atascadero, Cal.; Charles W. Knickerbocker, Watsonville, Cal.; W. N. Murphy Sales Company, Pasadena, Cal.; Auto Inn, Kokomo, Ind.; Scott Motor Company, Oklahoma City, Okla., and D. & S. Motor Company, Des Moines, Ia.

War Effects on Auto and Rubber Industries.—The feeling of apprehension which has unconsciously arisen concerning the manner and extent that general business, and particularly the automobile and rubber industries, will be affected by the entrance of the United States into the war, is interestingly commented on by Mr. G. M. Stadelman, vice-president of The Goodyear Tire & Rubber Company, Akron, Ohio. Mr. Stadelman has just returned from a thorough canvass of the war's effect on Canadian business, which he made in the hope that a more definite idea might be formed of the conditions that our country must face and conquer in the near future.

"Canada has gone through precisely the same conditions that now confront us, so the effect of the war there ought to be fairly indicative of what we may expect here," he declares. "General business conditions are very satisfactory in Canada at the present time. I found that in 1913 Canada had increased its number of registered cars 16,780, or 38 per cent, as against the 1912 registration, and during 1914, 22,070, or 36 per cent, as compared to 1913. War was declared August 1, 1914, so that the last figures were little affected thereby. Now, after two and one-half years of warfare Canada is this year buying 100,000 new motor cars, almost five times as many as were purchased during 1914, and an increase of 85 per

cent over the normal increase for 1913 and 1914.

"Every possible effort has been made to have Canadians save to help win the war. Ever since war was declared the people have been importuned to discourage the spending of money for things not absolutely necessary. The people are constantly confronted with placards, post cards, letters, billposters, newspaper articles and every other publicity device known, to discourage extravagance. And when you stop and think that 100,000 new cars are being bought in a country with a population of only 8,000,000, the condition can be accounted for in no other way than that Canadians do not regard the automobile as a luxury, but have found it under war conditions a prime necessity. Our population is about fifteen times that of Canada. Her purchase of 100,000 cars this year, with one-fifteenth of the population of the United States, is equivalent to our purchasing 1,500,000 automobiles, which is just about what this country will buy during 1917. So Canada under war conditions, with a constant crusade for economy, with the withdrawal of men, power and money far in excess of anything contemplated in the United States, is after two and one-half years, buying as many automobiles per capita as the United States expected to buy before the declaration of war with Germany. If Americans have had any doubts concerning the stability and prosperity of the motor car business, or business in general, the experience of Canada ought to dispel them."

The American-LaFrance Fire Engine Company, Inc., Elmira, N. Y., announces the following recent shipments: Hewlett, L. I. Type 40 comb. with Junior Pump; Phillipsburg, Pa. Type 40 comb. with Junior pump; Ephrata, Pa. Type 40 comb. with Junior pump; White Horse, N. J. Type 40 comb. with Junior pump; Minneapolis, Minn. Type 12 comb. chemical engine and hose car; Yonkers, N. Y. Type 45 triple comb. chemical engine and hose car; Cleveland Heights, N. J. Type 14 Service truck; Falls City, Nebr. Brockway chemical engine and hose car; Martinez, Calif. Type 40 comb. chemical engine and hose car; Beaver Falls, Pa. Type 40 comb. with Junior pump; Rock Island, Ill. Type 12 comb. chemical engine and hose car; Juneau, Alaska. Type 12 comb. chemical engine and hose car with junior pump; Willimantic, Conn. Type 12 triple; Tacoma, Wash. Pumping engine and hose car; Van Wert, Ohio. Type 40 comb. with Junior Pump; McSherrystown, Pa. Type 10 comb. with Junior pump; Hanover, Pa. Type 10 comb. with Junior pump; So. Orange, N. J. Type 12 triple comb. chemical engine and hose car; Duluth, Minn. Type 12 triple comb. chemical engine and hose car; Watertown, N. Y. Type 12 comb. with Junior pump; Omaha, Nebr. 3 Tractors; New Haven, Conn. Type 45 comb. pumping engine and hose car; Omaha, Nebr. Type 14 City

service hook and ladder truck; Chisholm, Minn. Type 40 comb. with Junior pump; Omaha, Nebr. Type 14 4-cylinder City service truck; Clarinda, Iowa. Type 40 comb. with Junior pump-

Returning Empty Cement Sacks.—A carload of sacks is worth more than a carload of cement. Good and repairable cloth sacks are worth ten cents each. Contractors and city departments and all others who use cement should realize that storing large numbers of empty sacks ties up money that earns no dividends. Prompt shipping brings prompt credit to dealers and sacks to the manufacturer. According to railroad rules bundles must be tied with three separate wires or ropes—in the case of the latter, not less than 3-15 inch in diameter. Bundles must be tagged with linen tags securely attached by wire and properly filled out with names and addresses of consignee and shipper and party to whom credit is to be issued, together with statement of quantity in shipment. Freight must be prepaid to destination. Credit is obtained quickly if the following rules are properly observed: Bundles must be identified before credit can be issued and identification card or letterhead inside a bundle insures such identification even if tag is lost in rough handling. Failure to send bill of lading delays credit as shipment is often received by manufacturer before railroad furnishes proper billing.

NEWS OF THE SOCIETIES

(Continued from page 704.)

Tonawanda. It is hoped that at this session there will be a comprehensive and thorough discussion of police work.

The fifth session comes on Wednesday, June 13, 8 p.m., Frank H. Truitt, mayor of Binghamton, presiding.

"The Feeble-minded Problem in Cities," Homer Folks, secretary, State Charities Aid Association, New York City.

"Municipal Public Markets," G. V. Branch, Bureau of Foods and Markets, U. S. Department of Agriculture, Washington, D. C.

"How Can City Government Be Made More Truly Representative of the Will of the People?" Frank L. Dowling (invited), president, Board of Aldermen, New York City.

On Thursday, June 14, 10 a.m., Foster Studeholme, mayor of Olean, presiding, will begin the sixth session.

"Municipal Pension Systems," Henry Bruere, former chamberlain, City of New York; discussion.

"Pasteurization of Milk," Dr. Henry L. K. Shaw, director, Division of Child Hygiene, State Department of Health, Albany; discussion.

The Advisory Committee has arranged for a question box during the conference. The Advisory Committee urges all city officials to submit one or more questions. These may be sent to the secretary any time before the con-

ference or may be placed in the box any time the conference is in session.

The headquarters of the conference will be the Hotel Iroquois. City officials are urged to make their hotel reservations well in advance. The city of Buffalo is arranging a program of entertainment both for the delegates and for the wives of the city officials who will be present. Announcement of this part of the program will be made later.

Engineers' Club of Columbus.

The Engineers' Club of Columbus, Ohio, was reorganized on April 20 with an active membership of 150. Through the generous co-operation of the Columbus Chamber of Commerce, the club will occupy spacious quarters in the Chamber of Commerce Building. The following officers were elected for the ensuing year: President, E. G. Bradbury; first vice-president, C. T. Morris; second vice-president, J. J. Morgan; treasurer, F. H. Eno; board of control, A. H. Hinkle, Philip Burgess, Thomas H. Brannan, Dudley T. Fisher; librarian, F. L. Purdy; secretary, M. Z. Bair.

STATE OF NEW YORK—THE CIVIL SERVICE COMMISSION.

June 2, 1917.

Notice is given that open competitive examinations for the state service will be held in various cities throughout the state on the date mentioned above, for the positions mentioned below. Any intending competitors must execute an application form and file it in the office of the commission. In writing for application form or information, candidates should specify particularly the position as given below, for which they desire to be examined.

141. JUNIOR ASSISTANT, Grade 6, Engineering Departments. \$901 to \$1,200. Men only. Minimum age, 20 years. Subjects of examination and relative weights: Problems in applied mechanics and mathematics, including surveying, elementary structures and hydraulics; questions on surveying and construction practice, and on materials of construction, 3; experience, education and personal qualifications, 2. Open to non-residents. Original appointments are usually made at the minimum salary with opportunity for subsequent increase. The Commission will endeavor to make arrangements to examine non-resident candidates in cities outside of New York State, such as Boston, Philadelphia, Pittsburgh, Cleveland, Chicago, etc.

142. JUNIOR ELECTRICAL ENGINEER, Public Service Commission, First District. Salary \$901 to \$1,200 a year. The duties are to inspect the power houses and equipment of subway, elevated and street railways, lighting and power companies in New York City. Candidates must have had at least three years' training in a technical school of recognized standing and not less than one year's experience in electric railroad or electric lighting work or in the manufacturing or installation of electrical or mechanical apparatus. Subjects of examination and relative weights: Theoretical and practical questions relating to the construction and operation of power house and railway equipment, electric distribution, measurements, standards, and other pertinent subjects, 5; experience and personal qualifications, 3; education, 2. Open to non-residents.

149. SANITARY SUPERVISOR, State Department of Health. \$3,000. Open to men and women, and limited to physicians. Persons desiring to take the examination, which will be held on June 9, 1917, should write to the "State Civil Service Commission, Albany, N. Y." for a special circular of information.

For application form address: State Civil Service Commission, Albany, N. Y. Application forms will not be sent out by mail after May 21. Applications received at the office of the commission after May 23 will not be accepted.

ADVANCE CONTRACT NEWS

**ADVANCE INFORMATION
BIDS ASKED FOR**
**CONTRACTS AWARDED
ITEMIZED PRICES**

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STATE	CITY	RECD UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS.				
Pa., Erie		May 18.	Paving several streets	F. G. Lynch, City Engr.
Miss., Sumner		May 18.	21.5 miles bit. gravel road; cost, \$150,000	A. N. Bullitt, Engr., Memphis, Tenn.
Ill., Monee		10.30 a.m., May 18.	6,700 ft. stone road	Emil Heft, Town Clerk.
Ala., Selma		noon, May 18.	Curbing, paving and improving two streets	W. O. Crisman, City Engr.
Ind., Indianapolis		10 a.m., May 18.	Sidewalks in various streets	Board of Public Works.
Ohio, Cincinnati		noon, May 18.	Road improvement, cost \$92,556	Wm. H. Boeh, Court House.
Wis., Milwaukee		7.30 a.m., May 18.	1,200 sq. yds. creosoted wood block	F. G. Simmons, Comr. P. W. C. E. Bolling, City Engr.
Va., Richmond		May 18.	Paving with gravel and granite spalls	
S. C., Darlington		May 18.	25,000 sq. yds. brick, asphalt concrete, concrete and sheet asphalt	W. L. Lee, Engr., Sumter.
Manitoba, Rockwood		noon, May 18.	Ditching and grading in six wards	D. M. Mawhinney, Engineer, Stonewall.
Ky., Paducah		10 a.m., May 19.	35 miles gravel and 3 miles concrete, rock asphalt or Tarvia road	R. H. Young, Highway Engr.
Minn., Litchfield		1 p.m., May 19.	Grading several roads	A. O. Palmquist, Co. Aud.
Ill., Decatur		10 a.m., May 19.	Paving with brick on concrete	P. T. Hicks, Con. Engr.
La., Terrebonne		11 a.m., May 19.	Furnishing clam shell and tile	Bd. of Supvrs., Rd. Dist. No. 2, Houma, La.
Ind., Terre Haute		11 a.m., May 19.	Grading and paving several roads	Thomas Ferguson, Co. Aud.
Ohio, Orrville		noon, May 21.	Paving South Main street	Village Clerk.
Wash., Montesano		May 21.	11,666 ft. 18-ft. concrete road	G. D. Robertson, Co. Engr.
Ohio, Kent		Noon, May 21.	9,000 sq. yds. first class pavement, probably Topeka, 3,000 ft. of curb, 10,000 sq. feet cement or asphalt sidewalk and 5,000 cu. yds. excavation	E. S. Royer, City Engr.
La., Gretna		8 p.m., May 21.	Paving with asphaltic materials	John Ehret, Mayor.
Ind., Indianapolis		10 a.m., May 21.	Laying sidewalks in various streets	Board of Public Works.
Pa., Plymouth		7.30 p.m., May 21.	6,000 gallons of road oil	G. J. Curran, Sec. of Council.
Ill., Edgar		May 21.	18,480 ft. gravel roads	O. S. Mason, Hwy. Comr.
D. C., Washington		2 p.m., May 21.	Paving with sheet asphalt and asphalt block	Chief Clerk, Engr. Dept., District Bldg.
Ky., Owensboro		noon, May 21.	44,000 sq. yds. asphaltic surfacing on macadam	E. B. Shifley, City Engr.
Minn., St. Paul		10.30 a.m., May 21.	Curbing and grading streets	H. W. Austin, Pur. Agt.
Minn., Worthington		2 p.m., May 21.	10,573 ft. grading and culverts	Gus Swanberg, Co. Aud.
Minn., Roseau		8 p.m., May 21.	5 miles grading and turnpiking	V. B. Chapin, Co. Engr.
N. Y., Albany		2 p.m., May 21.	Paving with brick and asphalt; setting curbs and laying sidewalks	Bd. of Contract & Supply.
Ill., Chicago		11 a.m., May 21.	Grading and paving with brick and concrete, with asphalt or tar surfacing	Bd. of Local Improvements.
Wash., Sprague		May 22.	Paving 13 blocks; concrete curbs	Sawyer Bros., Engrs., White Bldg., Seattle.
Ill., Rantoul		May 22.	Three-quarter-mile brick paving	City Clerk.
Wis., Marinette		May 22.	Concrete pavement and curb and gutter	City Engr.
S. D., Clear Lake		May 22.	Five 12-ft. road grading machines	J. M. Wold, Co. Aud.
Wis., Hartford		7.30 p.m., May 22.	19,650 sq. yds. reinforced concrete pavement	A. H. Martin, Engr.
Miss., Clarksdale		8 p.m., May 22.	30,000 sq. yds. asphaltic concrete and 7,000 ft. curb and gutter	W. S. Bobo, City Engr.
Ore., Monmouth		7.30 p.m., May 22.	5,300 sq. yds. bituminous pavement on concrete	E. J. Hines, City Engr., Dallas, Ore.
S. D., Lake Andes		3 p.m., May 22.	Five 12-ft. road graders	J. H. Lunde, Chrm., Co. Comrs.
La., Kinder		May 22.	Grading and constructing highways and bridges	L. W. Manuel, Pres., Road District No. 2.
Ohio, Newark		noon, May 22.	Brick pavement on concrete and stone curb	E. H. French, Village Clerk.
N. J., Trenton		2.30 p.m., May 23.	Paving Everitt Alley with vit. brick on 5-inch concrete base	City Commission.
Ark., Jonesboro		May 23.	Street paving; cost, about \$360,000	City Engr.
N. Y., Brooklyn		11 a.m., May 23.	Grading and paving with asphalt and granite block	L. H. Pound, Boro Clerk.
N. D., Fargo		10 a.m., May 23.	Curbing and paving alley	A. R. Watkins, City Aud.
Pa., Ebensburg		1 p.m., May 23.	Paving with brick and curbing	O. P. Thomas, Engr., Leader Bldg., Johnstown.
Ark., Clarksville		2 p.m., May 24.	15,000 sq. yds. concrete or asphalt paving, 8,200 ft. curb and gutter and 1,280 ft. 12 to 18-in. storm sewers	Winters & Dove, Engrs., Ft. Smith.
N. J., Bayonne		May 24.	Improving 9 streets	W. L. Clarkson, City Engr.
Okla., West Carrollton		10 a.m., May 24.	Paving with brick	Co. Comrs.
Va., Roanoke		noon, May 24.	Macadamizing, brick paving, concrete curb and gutter and granolithic sidewalks	F. L. Gibboney, City Engr.
W. Va., Morgantown		2 p.m., May 24.	15.5 miles brick, bit. concrete or macadam, concrete or macadam roads	C. A. Eichelberger, Co. Rd. Engr., Wellsbury.
N. D., Judson		May 25.	Grading 8 miles of county road	A. P. Dettmann, Twp. Clk.
Mich., Ingalls		May 25.	Gravel or crushed stone roads	A. M. Larsen.
Fla., Palatka		noon, May 25.	29 miles brick, asphalt, asphalt concrete, asphalt block or concrete pavement	R. J. Hancock, Clk., Co. Comrs.
Ind., Anderson		10 a.m., May 25.	Constructing two gravel roads, one brick road and one brick and concrete road in Madison County	E. T. Flahavin, Co. Audr.
Ind., Evansville		9 a.m., May 25.	Paving several streets	Board of Public Works.
Ind., Richmond		11 a.m., May 26.	Constructing road in Center township	L. S. Bowman, Co. Audr.
La., Alexandria		noon, May 26.	Grading and graveling 15 miles; bridges	I. W. Sylvester, Engr.
Ind., Terre Haute		11 a.m., May 26.	Constructing brick road	Thomas Ferguson, Co. Aud.
Ind., Indianapolis		10 a.m., May 28.	Paving and laying sidewalks	B. J. T. Jeup, City Engr.
Cal., Sacramento		2 p.m., May 28.	About 30 miles concrete paving on state highways	State Highway Commission.
Cal., Batavia		May 28.	8 miles concrete highway	State Hwy. Comn., Sacram'to.
Ky., Owensboro		noon, May 28.	44,000 sq. yds. bit. pavement	E. B. Shifley, City Engr.
Fla., Bartow		10 a.m., May 28.	302,000 sq. yds. asphalt pavement and 9 20-ft. bridges	G. Wollenweber, Engr., Wintherhaven

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
N. Y., Albany	1 p.m., May 28.	Resurfacing, reconstruction and surface treatment in 18 counties; improving roads in two counties.....	Edwin Duffey, State Highway Commissioner.
N. J., Camden	May 28.	400 sq. yds. 8-inch concrete paving in Diamond Street.	A. F. Sayre, City Comr.
Wash., Olympia	May 28.	9 miles highway surfacing	State Highway Commission.
Wash., Montesano	May 28.	6,300 ft. 18-in. asphaltic concrete on concrete.....	Geo. D. Robertson, Co. Engr.
N. J., So. Orange	7:45 p.m., May 28.	Paving with wood or asphalt block, Warrenite or concrete, 11,150 sq. yds.....	I. T. Redfern, Village Engr.
O., Port Clinton	May 29.	Paving with reinforced concrete.....	City Clerk
O., Lebanon	noon, May 29.	Paving and setting curb.....	M. E. Gustin, Village Clerk.
Miss., Greenville	May 29.	32,000 sq. yds. concr. Warrenite or asphaltic concr.....	J. S. Allen, Ch. Engr.
Minn., Chaska	11 a.m., May 29.	8,300 ft. road grading.....	J. B. Connolly, Co. Aud.
Minn., Warren	11 a.m., May 29.	Grading roads and constructing culverts.....	A. G. Lundgren, Co. Aud.
Ind., Evansville	10 a.m., May 31.	Road construction	C. B. Beard, Co. Aud.
Ind., Terre Haute	10 a.m., May 31.	Improving several alleys.....	City Engr.
Minn., Brainerd	May 31.	17 blocks concrete pavement.....	A. M. Albion, City Clerk.
Ind., Madison	7 p.m., June 1.	12,900 sq. yds. asphalt, concrete, brick or wood block.....	H. E. Nichols, City Clerk.
N. D., Bowbells	7 p.m., June 4.	Sidewalk construction during 1917.....	A. E. Larson, City Aud.
Ind., Brownstown	1 p.m., June 4.	Tarvia macadam and gravel roads.....	Albert Leudtke, Co. Aud.
Ind., Rushville	2 p.m., June 4.	Constructing stone roads.....	W. H. McMillin, Co. Aud.
Ind., Tipton	10 a.m., June 4.	Constructing gravel roads.....	Oscar Vanness, Co. Aud.
Ind., South Bend	11 a.m., June 4.	Three gravel roads.....	A. F. Wolf, Co. Aud.
Wash., Olympia	2 p.m., June 4.	Grading, paving with concrete and constr. concr. viaduct.....	Jas. Allen, State Hwy. Comr.
Ind., Rensselaer	2 p.m., June 5.	Eight stone roads.....	J. P. Hammond, Co. Aud.
Ind., Logansport	10 a.m., June 5.	Gravel road	A. P. Flynn, Co. Aud.
Ind., Kokomo	10 a.m., June 5.	867 ft. gravel road.....	W. L. Benson, Co. Aud.
Ind., Monticello	10 a.m., June 5.	One gravel and 2 stone roads.....	A. G. Fisher, Co. Aud.
Ind., Plymouth	2 p.m., June 5.	Slag and gravel roads.....	O. H. Weber, Co. Aud.
Ind., Brazil	10:30 a.m., June 5.	Limestone road	W. O. Graeser, Co. Aud.
Ind., Corydon	2 p.m., June 5.	Stone road	F. W. Fagel, Co. Aud.
Tenn., Johnson City	7:30 p.m., June 5.	25,000 sq. yds. paving, 15,500 ft. curb, etc.	P. F. McDonald, City Mgr.
Ind., Knox	noon, June 5.	Grading and paving highways.....	C. W. Weninger, Co. Audr.
Ind., Sneedville	10 a.m., June 6.	Completing unfinished road.....	Sam C. Mauck, Co. Aud.
La., Bay Minette	June 6.	Grading and improving 18 miles.....	Judge of Probate Court.
Ind., Valparaiso	2 p.m., June 7.	Gravel road	C. A. Blachly, Co. Aud.
La., Crowley	June 8.	Graveling, draining and grading, cost \$350,000.....	H. W. Bell, Engr., Laurel, Miss.

SEWERAGE.

N. J., Trenton	....	2:30 p.m., May 18.	Sewers in several streets.....	City Engr.
Mich., Flint	.....	9 a.m., May 18.	Tile drainage ditch	A. H. Reid, Co. Drain Comr.
Mass., Beverly	.....	7:30 p.m., May 18.	975 ft. 8-in. sewer.....	F. B. Browning, Com. Clk.
Wis., Milwaukee	.....	10:30 a.m., May 18.	Constructing 8 to 36-in. pipe and concrete sewers; man-holes	F. G. Simmons, Comr. P. W. W. P. Mason, Engr., 460 German Bk. Bldg., Marietta, O.
O., Matamoras	.....	noon, May 18.	Sanitary sewer	Director of Public Service.
O., Bowling Green	.....	noon, May 19.	Sanitary sewer	G. E. Baker, Engr.
Mont., Whitehall	.....	May 19.	Sewage disposal plant	District Comrs., District Bldg., Room 509.
D. C., Washington	.....	2 p.m., May 19.	5,700 ft. 3 to 8-ft. and 5,800 ft. 10 to 24-inch sewers.....	Board of Public Works.
Ind., Kokomo	.....	May 21.	10 and 12-in. sewers	City Engr.
Ill., Rockford	.....	2 p.m., May 21.	Sewer in two streets.....	City Engr.
Ont., Sault Ste. Marie	.....	5 p.m., May 21.	2,200 ft. of sewers.....	Board of Local Improvements.
Ill., Chicago	.....	11 a.m., May 21.	Sewers in several streets.....	L. P. Wolff, Engr., Germania Life Bldg., St. Paul.
Wis., Oceola	.....	8 p.m., May 21.	9,600 ft. 8 to 12-in. sewers and water supply system.....	H. W. Austin, Pur. Agt.
Minn., St. Paul	.....	10:30 a.m., May 21.	Sewers in several streets.....	G. J. Curran, Sec. of Council.
Pa., Plymouth	.....	7:30 p.m., May 21.	500 ft. 8-inch sewer.....	Edward Main, City Engr.
Ill., Rockford	.....	May 21.	1,870 ft. 9-inch sewer, including 150 cu. yds. rock excavation	E. S. Royer, City Engr.
O., Kent	.....	Noon, May 21.	2,500 feet 8 to 15-in. storm sewer.....	B. J. T. Jeup, City Engr.
Ind., Indianapolis	....	10 a.m., May 22.	Constructing sewer	J. B. McCrary Co., Engrs., Atlanta, Ga.
S. C., Bishopville	....	2 p.m., May 22.	Constructing sewer system	
Minn., Thief River Falls	.....	8 p.m., May 22.	Sewer in Third St.....	A. H. Fasel, City Clerk.
Minn., Tracy	.....	8 p.m., May 22.	770 ft. sewer.....	L. J. Fitch, City Recorder.
Wis., Sheboygan Falls	.....	7:30 p.m., May 22.	Storm sewers in six streets.....	Jerry Donahue, City Clerk.
Wis., Hartford	.....	7:30 p.m., May 22.	2,000 ft. 10 to 18-in. sewer.....	A. H. Martin, Engr.
Ia., Charles City	....	10 a.m., May 22.	115,000 ft. tile drains	C. R. Jones, Co. Aud.
Ark., Jonesboro	....	1:30 p.m., May 22.	8,350 ft. 12 to 24-in. sewers.....	Cobb & Lee, Engrs.
Pa., Philadelphia	....	noon, May 22.	Constructing drains	W. S. Twining, Director City Transit.
Ind., Peru	....	May 22.	One block 12-in. sewer	E. B. Lochridge, Engr.
Pa., West View	....	8 p.m., May 22.	1,800 ft. 15-in. sewer	C. A. McClain, Boro Clerk.
Ia., Jefferson	....	1 p.m., May 23.	Constructing drainage ditch	B. C. McCullry, Co. Aud.
N. Y., Brooklyn	....	11 a.m., May 24.	Temporary storm relief drainage ditch	Bureau of Sewers, 215 Montague St.
Ia., Fort Dodge	....	2:30 p.m., May 24.	Tile drain; cost \$23,966.....	County Aud.
Ark., Clarksville	....	2 p.m., May 24.	1,280 ft. 12 to 18-in. storm sewers.....	Winters & Dove, Engrs., Ft. Smith.
N. Y., New York	....	2 p.m., May 25.	Constructing receiving basins.....	Bur. of Sewers, Room 2103, Municipal Bldg.
Ind., Evansville	....	9 a.m., May 25.	455 ft. 10 and 12-in. sewer.....	Board of Public Works.
Md., Mt. Rainier	....	2:30 p.m., May 25.	10 miles sanitary sewers.....	Town Clerk
Ind., Valparaiso	....	May 25.	Sewer system, cost \$28,000.....	C. L. Nelson, City Engr.
Minn., Benson	....	May 25.	153 miles clay or cement tile drains; cost, \$478,000.....	D. P. Carney, Co. Aud.
Minn., Luverne	....	10 a.m., May 26.	Tile drainage ditch; cost, \$20,000.....	O. Skyberg, Co. Aud.
La., Alexandria	....	noon, May 26.	Laying drains	Board of Supervisors of Rapides Parish.
Ia., West Burlington	....	7 p.m., May 28.	15,000 ft. 8. to 12-in. sewer pipe, sewage pump plant and disposal plant	W. J. Gieselman, City Clerk.
Cal., Los Angeles	....	2 p.m., May 28.	Two vertical sewage pumping units	H. J. Leland, Co. Clerk.
N. J., So. Orange	....	7:45 p.m., May 28.	1,800 ft. 15-in. sewers.....	I. T. Redfern, Village Engr.
La., New Iberia	....	7:30 p.m., May 29.	Sanitary sewer and disposal plant.....	X. A. Kramer, Engr., Magnolia, Miss.
O., Lebanon	....	noon, May 29.	2,300 ft. 12 to 20-inch vitrified sewers.....	M. E. Gustin, Village Clerk.
Miss., Leland	....	8 p.m., May 29.	Four miles 8-in., 1 mile 10-in. sewer, 55 manholes, 18 flush tanks, disposal plant and pumping station.....	F. L. Wilcox, Engr., Syndicate Trust Bldg., St. Louis, Mo.
Ia., Creston	....	May 31.	300,000-gal. Imhoff disposal plant, filter beds and outfall sewer	T. S. De Lay, Engr.
Ill., Rushville	....	2 p.m., June 1.	Pumping plant for drainage and levee district.....	J. M. Kelly, Secy., Lake Draining and Levee District.
India., Calcutta	....	3 p.m., June 1.	Storm water pumping plant	C. C. Chatterjee, Sec. Corp. of Calcutta.

BIDS ASKED FOR

STATE	CITY	RECD UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Wis.	Burlington	2 p.m., June 2	About 9,000 ft. 6 to 42-in. sewer.....	P. J. Hurtgen, City Engr.
N. J.	Newark	June 5	Section of sewer at Greenville.....	Passaic Valley Sewerage Com.
Tenn.	Johnson City	7.30 p.m., June 5	Two jobs sewer work; about 7,600 ft. 8 to 15-in.	P. F. McDonald, Comr. and Engr.
Va.	Vinton	noon, June 6	1,315 ft. of sewer.....	H. C. Craft, Town Sergeant.
N. J.	Newark	June 12	Kearny-Harrison intercepting sewers	Passaic Valley Sewerage Com.

WATER SUPPLY.

Cal.	Los Angeles	4 p.m., May 18	Furnishing water meters, connections and Washers.....	Bd. of Pub. Service Comrs.
Ia.	Audubon	3 p.m., May 19	200,000-gal. concrete reservoir, 75,000-gal. steel tower, artesian well and 6 miles water mains.....	Geo. Kelly, City Clerk.
Ill.	Chicago	11 a.m., May 21	Water supply and water service pipes.....	Board of Local Improvements.
Mo.	Louisiana	11 a.m., May 21	Oil-driven pumping plant.....	J. Robert Johnson, Sec.
Wis.	Osceola	8 p.m., May 21	Pump house, pumping plant, concrete reservoir, deep well and distribution system.....	L. P. Wolff, Engr., Germania Life Bldg., St. Paul.
S. C.	Bishopville	May 22	Water works extensions	City Clerk.
N. Y.	New York	11 a.m., May 22	Making borings at Ashokan reservoir.....	Board of Water Supply
Ill.	Knoxville	8 p.m., May 23	Steel tank and tower, 40,000 to 60,000 gals., on 80 or 100- ft. tower	Marr, Green & Co., 17 N. La Salle St., Chicago. John A. Zavadil, Vil. Clerk.
Neb.	Humphrey	8 p.m., May 24	Constructing reservoir	Town Clerk
Md.	Mt. Rainier	2.30 p.m., May 25	10 miles 4-in. and 8-in. water mains, pumping station and steel tank and tower.....	M. S. McGraw, City Clerk.
Neb.	Tekamah	8 p.m., May 28	3,300 ft. water mains.....	Chipman & Powers, Engrs., Mail Bldg., Toronto.
Ont.	Brantford	8 p.m., May 28	Two 300-g.p.m. electrically-driven turbine pumps, motors, etc.	Quartermaster, Newport, R. I.
R. I.	Ft. Greble	11 a.m., June 2	1,000,000-gal. concrete reservoir.....	Hazen, Whipple & Fuller, Engrs., 30 E. 42nd St., New York City.
N. Y.	Auburn	1 p.m., June 5	Sand filtration plant, pipe line, etc.....	

MISCELLANEOUS.

Minn.	Elk River	1 p.m., May 18	County ditch; cost, \$12,475.....	Arthur Robinson, Co. Aud.
Ind.	Otwell	10 a.m., May 18	Drainage ditch	John Chappell, Petersburg.
D. C.	Washington	11 a.m., May 21	Furn. and installing turbo generators and turbo alterna- tors from 500 k. w. to 4,375 k v. a.....	Bureau of Yards & Docks, Navy Dept.
Va.	Norfolk	noon, May 21	Constructing part of municipal pier	W. W. Gwathmey, Engr., Sea- board Bk. Bldg., Norfolk.
Pa.	Ford City	May 21	One 2½ to 5-ton motor truck with dump body.....	D. O. Crouch, Boro. Sec.
D. C.	Washington	May 21	Steam turbine driven and engine driven air compressors, 2,500 to 8,000 ft. capacity per minute.....	Bureau of Yards and Docks, Navy Department.
N. J.	Millburn	8 p.m., May 21	Collection and disposal of garbage, ashes and rubbish for two years.....	M. R. Silance, Township Clk.
Minn.	Ivanhoe	4 p.m., May 22	Grader with 12-ft. blade.....	K. A. Hansen, Co. Aud.
S. D.	Clear Lake	2 p.m., May 22	Drainage ditch, requiring 130,000 cu. yds. excavation.....	J. M. Wold, Co. Aud.
Ia.	Charles City	10 a.m., May 22	Constructing drainage ditch.....	C. R. Jones, Co. Audr.
N. Y.	New York	11 a.m., May 22	Furnishing cement at Ashokan Reservoir	Principal Asst. Engr., Board of Water Supply.
N. Y.	New York	noon, May 22	Parts for sweeping machines.....	J. T. Fetherston, Comr. Street Cleaning.
Ind.	Indianapolis	10 a.m., May 22	1,300 cu. yds. crushed limestone and screenings.....	City Purchasing Agent.
Ont.	Toronto	noon, May 22	Two 5-ton and two 3½-ton gasoline trucks for Depart- ment of Street Cleaning.....	St. Commr.
Tex.	El Paso	May 23	Canal work, requiring 196,000 cu. yds. excavation.....	Reclamation Service.
Colo.	Denver	2 p.m., May 23	75,000 bbls. portland cement	U. S. Reclamation Service, Tramway Bldg., Denver.
N. J.	Glen Ridge	8 p.m., May 23	2,600 cu. yds. grading at Municipal Building.....	J. A. Brown, Boro. Clerk.
N. J.	Newark	4 p.m., May 23	Boilers, engines, generators, switchboard, etc.	Runyon & Carey, Engrs., 845 Broad St., Newark.
D. C.	Washington	May 24	Casings and tubes for trucks and motorcycles.....	Chief Clerk, Dept. of Com- merce.
N. Y.	New York	2 p.m., May 24	Concrete bulkhead at Corlears Hook Park.....	Dept. of Parks.
Minn.	Stillwater	May 26	Drainage ditch; cost, \$14,000.....	N. A. Nelson, Co. Aud.
Ind.	Anderson	10 a.m., May 26	Drainage ditch	LeRoy Free, Supt. Constr.
D. C.	Washington	May 28	Bridge cranes, 2 to 80-ton.....	Bureau of Yards & Docks.
Minn.	Duluth	11 a.m., June 4	Furnishing 32 truck tires.....	P. G. Phillips, Comr. of Pub- lic Utilities.
Ala.	Montgomery	2 p.m., June 9	16,000 tons gravel or crushed stone.....	U. S. Engineer Office.
Ala.	Montgomery	June 16	14,000 bbls. Portland cement.....	U. S. Engineer Office.

STREETS AND ROADS.

Douglas, Ariz.—Taxpayers voted in favor of issuing \$10,000 paving bonds.

Berkeley, Cal.—After a long campaign waged by Mayor S. C. Irving, Commissioner F. T. Robson, other city officials and Senator Arthur H. Breed, funds of \$29,459 for the improvement of streets bordering the university grounds have been appropriated by the state legislature and now await only the signature of Governor Stephens, according to information received by the city council from Senator Breed.

Fresno, Cal.—City will improve Iowa Ave. from First to Ninth Aves. in grading, curbing with cement curbs, oiling and culverting with corrugated iron culverts, also to lay stone sidewalk; Ventura from R to Angus will be graded, curbed and paved. A 6-in. sewer will be laid in block 3 of Belmont Addition. Also the grading and paving of the alley in block 335, with a 6-ft. wide stone sidewalk on the H St. side of the block. Plans and specifications were presented and accepted for the Park Boulevard bridge in connection with the paving of H St. Referred to the street

committee. Cost of the bridge will be about \$3,800.

Los Angeles, Cal.—Council adopted ordinances changing and establishing the grade of following streets: Third St. from Lorena St. to Indiana St.; Cabrillo Ave., from First St. to Second St.; Avenue 54, from Hub St. to Aldama St.

Los Angeles, Cal.—Council adopted ordinance for the improvement of first alley northwesterly of Bonnie Brae St. from Ocean View Ave. to Sixth St. and portions of Maryland St.

Merced, Cal.—Ed. Suprva. plan election to vote on \$1,000,000 bonds to build paved highways. P. T. Thornton, Co. Clk.

San Jose, Cal.—County endorsement and financial backing were tactfully pledged by members of the boards of supervisors of Santa Clara, Santa Cruz, San Mateo and San Francisco counties to the new "skyline" boulevard bill passed at the session of the last state legislature and which was recently signed by Governor Stephens, by which it is proposed to link San Francisco with Santa Cruz through the construction of a 50-mile scenic highway along the crest of the western range. Surveyors and engineers

to work on estimates and plans for immediate construction.

Bridgeport, Conn.—Common council accepted report of street and sidewalk committee and John St. extended through Main St. to Water St. and widened to 50 feet from Main St. to Broad St.

Boulder, Colo.—City plans to issue \$103,200 bonds to pave streets. Paving Imp. Dist. No. 11. G. R. Joslyn, City Engr.

Denver, Colo.—Contr. improving roads will shortly be let by State Highway Comrs., about \$1,250,000.

Washington, D. C.—See "Miscellaneous."

Key West, Fla.—City engineer was authorized to purchase 20 barrels of Tarvia to complete William St., between Fleming and Southard Sts., also to construct concrete curb and gutter on said block.

Freeport, Ill.—The good roads committee of the Chamber of Commerce, after tour of inspection of the Cedarville road between Freeport and Wisconsin line, will urge to pave the first mile improved as soon as possible and after that see if it is not possible to have the rest of the road graded and put in good repair.

Joliet, Ill.—Board of local improvement authorized bids for paving of Wilcox St. from West Jefferson St. to Granite St., and Comstock St. from McDonough St. to West Marion St.

Joliet, Ill.—Board of local improvement approved a profile, resolution and estimate for a vitrified brick pavement on South Chicago St. from Duncan St. to Hickory Creek. Estimated cost, \$7,661.46. Public hearing on the proposition was set May 21.

Joliet, Ill.—City ordered paving on Michigan St. from Washington St. to Clinton St., and on Jackson St. from Chicago St. to Collins St., and for a sewer and water main in Taylor St.

Rock Island, Ill.—Board of local improvement approved ordinance recommended for paving of Twenty-fourth-and-a-half street, Seventeenth to Third Ave., with asphalt, to be 24 ft. wide and the estimated cost will be near \$15,000.

Rock Island, Ill.—City commission adopted ordinance for paving with brick of 13th Ave., 25th to 30th St., estimated cost \$20,448.45, and 24th St., 18th to 21st Ave., cost \$21,330, and for sidewalks in McInnis's 11th St. addition, cost, \$4,798.67.

Brazil, Ind.—Bids received May 23, 1917, at 10.30 a. m., by treasurer of Clay county, for sale \$10,000 and \$17,000 highway improvement bonds, 4½ per cent., ten years. Thos. W. Swinehart, Treasurer.

Brookville, Ind.—Bids received June 4, 1917, at 1 p. m., by Auditor Franklin county, for sale, 4 per cent., two years. Chas. G. Reifel, Auditor.

Brownstown, Ind.—Bids received May 21, 1917, at 1 p. m., by treasurer of Jackson county, for sale \$10,800 highway improvement bonds, 4½ per cent., 10 years. John E. Belding, Treasurer.

Delphi, Ind.—Bids received May 22, 1917, at 3 p. m., by treasurer of Carroll county, for sale \$12,700 highway improvement bonds, 4½ per cent., ten years. D. L. Musselman, Treasurer.

Evansville, Ind.—The resolutions for the construction of the following concrete sidewalks were confirmed by the board. Both sides of First Ave., from Division to Pennsylvania St.; east of Howard St., from Second St. to Van Buren Ave.; south side of Pennsylvania St., from Bond to Fifth St.; north side of Franklin St., from Main to Baker Ave.; south side of Franklin St., from Main St. to Baker Ave.; both sides of Second Ave., from Division to Ingle Sts.; both sides of Second Ave., from Ingle to Pennsylvania Sts.; south side of Division St., from Main to Rowley Sts.; both sides of Rose Ave., from Division to Franklin Sts.; west side of Lemcke Ave., from Pennsylvania to Vermont Sts.; west side of Vermont St., from Lemcke to McDowell Aves.; both side of Missouri St., from Harriet to Read St.; both sides of First Ave., from Morgan Ave. to the bridge; east side of Heidebach Ave., from Morgan to Reis Aves.

Evansville, Ind.—Bids received May 24, 1917, at 10 a. m., by Treasurer of Vanderburgh County, for sale \$6,500 highway improvement bonds, 4½ per cent., 10 years. Newton W. Thrall, Treasurer.

Frankfort, Ind.—Bids received May 24, 1917, at 10 a. m., by treasurer of Clinton county, for sale \$2,800, \$2,160 and \$2,720 highway improvement bonds, 4½ per cent., ten years. O. M. Roush, Treasurer.

Goshen, Ind.—Elkhart county commissioners failed to receive any bids for gravel and concrete roads advertised for letting on May 8.

Indianapolis, Ind.—Ordinances were introduced providing that the board of public works be authorized to proceed with its plans for the resurfacing of South St. from Virginia to Kentucky Aves. over a majority remonstrance of resident property owners.

Knox, Ind.—Bids received May 22, 1917, at 12 M., by treasurer of Starke county, for sale \$7,000 highway improvement bonds, 4½ per cent., 10 years. John L. Kesler, Treasurer.

Kokomo, Ind.—Bids received May 22, 1917, at 10 a. m., by treasurer of Howard county, for sale \$54,200, \$20,600 and \$9,000 highway improvement bonds, 4½ per cent., ten years. Ora J. Davies, Treasurer.

Lawrenceburg, Ind.—Bids received May 22, 1917, until 4 p. m., by treasurer of Dearborn county, for sale \$3,900 highway improvement bonds, 4½ per cent., 10 years. J. A. Bobrink, Treasurer.

Monticello, Ind.—Bids received June 3, 1917, at 10 a. m., by treasurer of White county, for sale \$7,800 and \$15,000 highway improvement bonds, 4½ per cent., ten years. O. C. Middlestadt, Treasurer.

Mount Vernon, Ind.—Peoples Bank & Trust Co. of Mt. Vernon, bought a total of \$39,800 Posey county road bonds, at par and aggregate premium of \$210.

Plymouth, Ind.—Bids received June 5, 1917, at 7 p. m., by treasurer of Marshall county, for sale \$8,600 highway improvement bonds, 4½ per cent., ten years. Geo. W. Huff, Treasurer.

Portland, Ind.—Bids received May 21, 1917, at 10 a. m., by treasurer of Jay county, for sale \$3,600 highway improvement bonds, 4½ per cent., 10 years. John W. Current, Treasurer.

Rensselaer, Ind.—Bids received May 22, 1917, at 1 p. m., by treasurer of Jasper county, for sale \$9,600, \$13,000 and \$11,400 highway improvement bonds, 4½ per cent., 10 years. Chas. V. May, Treasurer.

Salem, Ind.—Bids received May 22, 1917, at 1.30 p. m., by treasurer of Washington county, for sale \$41,270 highway improvement bonds, 4½ per cent., ten years. Otto Zink, Treasurer.

Versailles, Ind.—An issue of \$3,900 Ripley county road bonds were sold to the Batesville Bank at par and \$51 premium. The Napoleon State Bank took a \$3,861 issue at par and \$101.50 premium.

Warsaw, Ind.—Bids received May 21, 1917, at 2 p. m., by Treasurer of Kosciusko County, for sale \$13,473.20 highway improvement bonds, 4½ per cent., 10 years. A. J. Logan, Treasurer.

Davenport, Ia.—Bd. of Public Works recommends to city council the opening of Oak St. from Telegraph Rd. to Locust St.; cost approximately \$17,000.

Davenport, Ia.—Council may open street. City engineer, the board of public works and the city attorney were ordered to prepare plans and documents showing the location of all streets in the city now being used as private property.

Davenport, Ia.—City council guaranteed that a road would be built from the foot of Ripley St. to the Boat Club across the Milwaukee tracks.

Glenwood, Ia.—A resolution was introduced by the city council providing for the construction of about 36,000 yds. of street paving and 32,000 ft. of curbing. Concrete, asphaltic concrete and the various forms of brick pavement are being combined. C. P. Hamilton, City Clk., and Theo. D. DeLay, of Creston, Ia., City Engineer.

New Hampton, Ia.—City Council made plans for twenty-one blocks of asphalt paving this season.

Hutchinson, Kan.—City Commission petitioned for sidewalk on the east side of North Monroe, from 17th to 24th Sts. A resolution for the re-paving of the gap on South Main between the Rock Island and Ave. F was introduced.

Hutchinson, Kan.—A resolution and ordinance were put on first reading for construction of sidewalks on more than four miles of city streets recently petitioned for, includes walks on North Walnut, North Popular, North Bismarck, North Maple, Reformatory Ave., East Sixth, Spencer, Tyndall, Bonebrake, Gregory, South Walnut, West Seventh and West First Sts.

Hutchinson, Kan.—City will repave South Main St. from Ave. D to Ave. F, and also for the paving of First Ave. east from Walnut to Bismarck.

Topeka, Kan.—County plans 16-ft. brick road cement curb on concrete foundation, from Topeka to Lawrence. About \$16,000 per mile.

Shreveport, La.—City will pave the alley between Crockett St. and the V. S. & P. tracks.

Portland, Me.—Announcement of the proposed building program for 1917, made public by the Maine State Highway Commission, gave the first intimation of the location of the Federal aid highway in Maine, made possible by the Bankhead-Shackford bill, as well as much other interesting highway information throughout the state. The program has been forwarded to the War Department for approval. Work will be started on the Portland and Lewiston state highway; also between Portland and West Falmouth, Brunswick and Lewiston road, via Lisbon Falls added to system; several miles to be built. The official Federal aid highway for Maine

which has been approved by the United States Government and which is to be constructed with the \$730,000 given to Maine by the Federal Government and which is to be augmented with the same amount by the state, will begin at Portland and this year's section will be built from Brunswick to Gardiner.

Boston, Mass.—There was no opposition before the street commissioners at the public hearing given on the plan to widen Charles St. 10 ft. from Beacon St. to Chestnut St., and from Revere St. to Cambridge St., water side. The commission has an appropriation of \$135,000 to carry out plan.

Salem, Mass.—See "Water Supply."

Lansing, Mich.—City will vote June 14 on the question of issuing the following bonds: \$15,000 for the erection of a fire station in the northeast section of the city; \$70,000 in serial form for the purchase of the Cowles' block, North Washington Ave., for city park purposes. A blanket bond issue for \$75,500 to defray a part of the costs of paving Franklin Ave. from the P. M. R. R. crossing to Clark St., Pennsylvania Ave. from Michigan Ave. to Saginaw St., and the repaving and widening of South Washington Ave. from the Grand River bridge to the G. T. R. R. crossing.

Manistee, Mich.—Walter A. Johnson of Cadillac, county surveyor, has surveyed the scenic route between Stronach and Eastlake. Lines for the route have been laid out and it is probable that the commissioners will advertise for bids for the work within three weeks. The county road commissioners are having printed bids made for the grading work to be done on the north road at High Bridge. These bids will be advertised at some early date. It is not expected to complete more than a mile of the scenic route this year. Only \$1,500 has been appropriated for the work so far.

Aitkin, Minn.—The road two miles south of Aitkin, between the Gilmore and Charles Lind farms, will be repaired by the county.

Duluth, Minn.—City Commissioner ordered Ramsey St. paved, from Oneota St. to the new Soo station, a distance of about 382 ft. The estimated cost is \$6,593 for concrete and \$8,820 for sandstone.

Duluth Minn.—West End Commercial Club will ask the city to pave 22nd Ave. this year.

Mankato, Minn.—Council authorized Councilman Steiner to purchase a carload of paving brick for repair of streets.

Minneapolis, Minn.—Council committee recommended for passage an ordinance providing for the widening of Third Ave., south, from Sixth St. to Grant St., to provide an 80-ft. street, with 15-ft. sidewalks on either side of a 50-ft. roadway.

Carthage, Mo.—The city engineer was ordered to prepare plans, specifications and estimates for the grading and graveling of Highland Ave. from Hazel Ave. to Garrison Ave.

Webb City, Mo.—City plans to improve streets. About \$30,000. L. E. Briggs, City Engr.

Beatrice, Neb.—The Peters Trust Co. of Omaha purchased the \$40,000 intersection paving bonds. H. M. Garrett, City Clk.

Plymouth, N. H.—Messrs. Baker, Ayling & Young of Boston purchased the \$65,000 paving bonds. T. H. Palmer, City Aud.

Carlstadt, N. J.—The front of the borough hall property will be improved. A concrete sidewalk will be put down instead of the blue stone now placed there. Estimates are to be procured for this work at once.

Newark, N. J.—Plans for part of the \$600,000 road improvement work programmed by the Board of Freeholders for this year were approved by the road committee. County Engineer Rehmier was instructed to place the plans before the State Highway commission with the idea of obtaining state aid. The roads passed are Ridgewood R., Glen Ridge, Little Falls Rd., and Grove St., Montclair; and Sanford Ave., Irvington. Bids for the improvement will be advertised for as soon as the plans are passed by the commission.

Elmira Heights, N. Y.—Village Board plans to extend McCauley Ave. from Garfield St. on to McCann's Blvd.

Jamaica, (L. I.), N. Y.—Coroner Daniel M. Ebert's jury, at an inquest in Jamaica town hall, ordered Cooper Ave., near Dry Harbor road, Glendale, paved.

Plattsburgh, N. Y.—State to expend over

\$4,000,000 for highway improvements this year.

Asheville, N. C.—City commissioners adopted a new street improvement program calling for the expenditure of \$20,000 within the next 3 years.

Asheville, N. C.—Secretary of Agriculture approved plans for the restoration of the Hickory Nut Gap Rd., which ends the matter so far as the federal government is concerned. The only delay in actual work of construction of the long-delayed project will now be with the North Carolina Prison Board, which is to furnish a force of State convicts to work on the road. The state highway commission engineer is gathering in Polk County the necessary information preparatory to submitting the project for Polk County of the Asheville-Spartanburg highway. The commission recently allotted \$10,000 to this road. It is supposed a bond issue in that section will be proposed for the purpose of building the highway there.

Warrenton, N. C.—Improv't. bonds to the amount of \$15,000 offered on Mar. 6, have been sold to the Citizens Bank of Warrenton at par.

Winston-Salem, N. C.—County commissioners decided to proceed at once with the preliminaries for the issuance of bonds in the sum of \$50,000 for the benefit of the road fund of the county. An order was made that Mr. G. W. Maslin, chairman of the board, advertise for bids on the issue, to be opened at the Court House on June 8.

Akron, O.—Resolution passed for improving Brookside St. from Main St. to Bellows St. by grading, constructing sidewalks, sewer and sewer laterals, and water service connections. W. J. Laub, Mayor.

Akron, O.—Ordinance approved for improvement of South St. from Main St. to the Blvd., by grading, curbing and resetting, curbs, paving and repaving, constructing sidewalks, storm sewer and sewer laterals and water service connections and water mains.

Akron, O.—Council passed resolution for improving 1st St. from Main St. to Bellows St., by grading, constructing sidewalks, sewer and sewer laterals and water service connections.

Akron, O.—Council approved ordinance for the improvement of North Howard St. from the old corporation line to the south line of Lot No. 403 of Carpenter Heights allotment, and of North Howard St. from the south line of Lot 403 of the Carpenter Heights allotment to the north line of Woodale Ave., by grading, curbing, paving, constructing sidewalks, storm sewer, sanitary sewer, together with laterals thereto for house connections and water service connections. Geo. C. Jackson, President of Council.

Akron, O.—Resolution approved for improving Webber Ave. from Charlotte St. to Dick St., by grading, curbing and paving, and Bishop St. from Edgewood Ave., to Willow St., and Bell St. from Bishop St. to the southerly end by grading to the established grade.

Bowling Green, O.—County sold \$150,000 bonds to improve roads.

Canton, O.—Ordinance approved for the improvement of Eighth St., N. E., from Belden Ave., N. E., to the East Corporation line, by grading to a width of 60 ft., paving the roadway 40 ft. wide with vitrified street paving brick, upon concrete foundation, lay sawed stone or concrete sidewalks along the north side, and providing the necessary water drainage and water services to the curb lines. Charles A. Stolberg, Mayor.

Cincinnati, O.—County commissioners approved two revised estimates by Surveyor Boeh for improvement of Springfield Pike (Dixie highway), from Cartage to Allen road. One proposed is of brick on the whole road width and is estimated to cost \$274,182.70. The other is for brick paving on the roadway and asphaltic concrete between the car tracks, and is estimated to cost \$267,499.10. Surveyor Boeh was instructed to prepare plans and specifications for improvement of Hamilton Pike, from North Bend road to Mt. Healthy.

Cleveland, O.—Ordinance approved to issue bonds in anticipation of special assessments for street improvements, to be known as Street Improvement Bonds, in the sum of \$20,200 for paving and constructing sidewalks on the following streets: Rosehill Ave. S. E., from 722 ft. east of Woodhill Rd. S. E. to Shaker Blvd. S. E. \$14,875.00. East 103d St., from Rosehill Ave. S. E. to Buckeye Rd. S. E. \$5,325.00.

Cleveland, O.—Ordinance approved for

the issuance of \$18,000 bonds for the opening, widening and expanding public street and highways.

Elyria, O.—See sewerage.

Fredericksburg, O.—Citizens voted in favor of issuing \$7,500 Mill St. paving bonds.

Kalida, O.—Village council passed resolutions for the issuance of \$4,000 street improvement bonds.

Marietta, O.—Council adopted ordinances to pave College St. to a width of 14 ft.; cost, \$2.15 per ft., and 6th St., 24 ft., \$3.17 per first foot—total cost, \$3,241. Also to pave Spring St., from Vine to Holly, and Vine, Poplar, Chestnut and Holly Sts., from Oakwood Ave. to Spring St. The total cost of the improvement will be \$21,411.54; cost per front ft., \$3.21.

Mansfield, O.—Council adopted resolution that a grade be established on Pleasant Ave., from 3d to 4th St.

Middletown, O.—City Auditor Louis F. Nein receiving bids June 15 for the purchase of bonds in the aggregate amount of \$9,000 for resurfacing, repairing, grading and improving existing streets in the city.

Springfield, O.—Resolution adopted for paving of portion of Western Ave. from Pleasant St. to Snyder. William H. Mahoney, Clerk of the City Commission.

Wellsville, O.—No bids received for 7th St. improvement bonds to the amt. of \$1,773.80.

Zanesville, O.—Bids will be asked for approximately 8,500 cu. yds. of grading in Greenwood Cemetery, also for approximately 1,600 ft. of 10-in. cast-iron water pipe for Forest Ave. W. W. Roach, Director Public Service.

Zanesville, O.—Bids for two other paving jobs will be asked for as soon as the legal advertising has been completed.

Alex., Okla.—City election May 26 to vote on \$28,000 bonds to build roads and bridges.

Chickasha, Okla.—County voted \$10,000 bonds to build roads. Tuttle Twp.

Canyon City, Ore.—Grant county petitioned for a change in the county road for a distance of 3 1/4 miles in district No. 20. County Surveyor Bernon L. Glaze and Bascom Glaze and C. W. Schryer were appointed viewers to report to this court by May 31.

Canyon City, Ore.—Grant county will vote on \$141,999 bonds for the construction of the John Day highway, and in case the bond issue is carried at the June election, a resolution was passed to cooperate with the state and forest service to the extent of \$15,000 in the construction of the road on the John Day route within the forest reserve from the mouth of Reynolds Creek to the Baker county line.

Carbondale, Pa.—An ordinance providing for the issuance of city bonds in the sum of \$55,000 to defray the city's share of paving, sewerering, new motor driven fire apparatus, new hose house for the Fourth Ward.

Harrisburg, Pa.—State Highway Commissioner Black rejected the four bids offered for roads in Allegheny, Washington, Cambria and Dauphin counties. Bids are too high for the work. Will be re-advertised, as will one in Clarion county which brought no bids.

Harrisburg, Pa.—Permanent work to be done on the William Penn Highway during the summer and fall includes the following: Between Johnstown and Ebensburg—Completion of 7 miles of concrete and hillside brick between Good's corner and Munday and repair of macadam between Munday's and Jamestown. Huntingdon and Millcreek—Completion of filbertine between these points by Aug. 14. Altoona and Union Furnace, through Tyrone—Completion of thoroughfare from Union Furnace to Tyrone, which includes elimination of curves and hills; also construction of several miles of permanent highway between Tyrone and Altoona. Millertown and Harrisburg—Elimination of grade crossing and construction of 2 miles of permanent highway at Speecerville; also the permanentizing of greater part of distance between Dauphin and Clark's Ferry. Montgomery county—Permanentizing of William Penn Highway in its entirety, from western border of county to Philadelphia county line. Berks county—Construction of 10 miles of permanent highway. Northampton and Lehigh counties—Completion of concrete connecting Allentown and Easton. Lehigh county—Improvement of highway between Allentown and Kutztown, making the William Penn an all-season road from Reading to Easton.

From Harrisburg to Gettysburg—Improvement of highway through Dilisburg. An effort is being made to secure permanent construction in Indiana and Westmoreland counties, west of Armagh. The construction by the Cambria county commissioners of 2 miles of brick between Ebensburg and Cresson, completing a county road, the William Penn highway or its alternate—southern—road in Blair county, from Johnstown to Philadelphia.

Johnstown, Pa.—County commissioners voted to appropriate \$25,000 toward the construction of a permanent road between Geistown and Lamb's Bridge, South Fork, a distance of about 10 miles. The appropriation was voted on following a conference with a delegation from Adams and Richland townships. Plans and specifications of the road must be filed before anything further can be done. The highway will be constructed of brick on a concrete base. The total cost will run close to \$20,000.

Lansdowne, Pa.—Borough Secretary John W. Davis receiving bids June 5 for 4% J. & D. 30 year highway coupon bonds of \$25,000.

Seranton, Pa.—Ordinance approved for the laying of four foot sidewalks on the several streets and avenues in the 21st Ward of the city; also on the several streets and avenues in the First and Third Wards of city, at the expense of the owners of abutting property.

Wilkes-Barre, Pa.—Ordinance presented for first reading providing for the grading, curbing and paving of McGarragher St., between Grove and High Sts., and the grading, curbing and paving of Howard St., between Hancock and Sheridan Sts.

Woonsocket, R. I.—Resolutions authorizing the laying out of Gobelle Ave. from Social St. to Page St. were referred to the finance committee.

Fort Mill, S. C.—Citizens will vote in the near future on the question of issuing \$20,000 street improvement bonds.

Spartanburg, S. C.—Spartanburg Co. \$1,000,000 highway bonds were rejected. John A. Law, Chairman Highway Comm.

Sisseton, S. D.—County plans to crown and gravel 100 mile road. R. P. Didlake, Co. Engr.

Angleton, Tex.—County election June 2 to vote on \$150,000 bonds to build roads, Road Dist. No. 20.

Galveston, Tex.—City commissioners petitioned for street repaving in 21st and 22d Sts., between Aves. K. and M., and citizens of 24th St. asked that the city furnish 3 or 4 loads of gravel or shell, and that they to furnish the labor, for the repairing of a portion of 24th St. The requests was referred to Commissioner Sappington for investigation and report.

Houston, Tex.—The proposition to vote \$1,100,000 of county bonds for placing bituminous topping on 236 miles of county road and building 10 miles of concrete road will probably be put up to the people June 27.

Ordon, Utah.—City will shortly vote on \$100,000 bonds to pave streets. J. M. Tracey, City Engr.

Provo, Utah.—The \$750,000 bonds to pave road was defeated in the county.

Salt Lake City, Utah.—County plans to build 10 miles of state road.

Richmond, Va.—City Engineer Bolling to advertise for bids for paving with granite spalls the city's portion of the roadbed of 31st St., from M. to Q., also for graveling and rolling the roadbed of 35th St., from Leigh to O., and Dickenson St., from Cowardin to Mill Rd.

Martinsburg, W. Va.—Citizens voted in favor of issuing \$115,000 street improvement bonds.

Centralia, Wash.—The City Comm. has created a large improvement district in the south end of the city for the laying of cement sidewalks. Active construction is expected to start before June 1. The walks will be laid by the city by day labor.

Everett, Wn.—Ordinance passed providing for the improvement of Clinton Pl. et al., by removal of old lumber, grading, concrete walks, plank curbs and gutters, drainage, etc. Hans Mumm, Jr., city engr.

Ferndale, Wn.—Council will shortly call for bids for paving Bridge St. with either two course, belt finish, or one course concrete.

Elkhorn, Wis.—The State Bank of Elkhorn was the successful bidder for the \$40,500 street improvement bonds.

A. C. Oleson, City Clerk. Superior, Wis.—South End Superior Commercial passed a resolution favoring

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Wabash, Ind.—*Kilty, Heck & Kilty, of North Manchester, Ind., have the contract for construction of a Wabash County road at a cost of \$9,323.

Williamsport, Ind.—*C. L. Irwin, of Attica, Ind., will build 4,993 ft. of gravel roadway for Warren County.

Fl. Thomas, Ky.—*C. J. Helm, Forest Ave., paving Tremont Ave., Engr., W. L. Glazier, York and Court Sts., Newport, Ky. H. W. Ross, City Clerk, Ft. Thomas.

Ludlow, Ky.—*Kirchner Construction Co., 221 W. Ninth St., paving Ludlow highway and Devereux St., Engr., Wm. Purcell, 136 Elm St. W. B. Cullen, City Clerk.

Morris, Minn.—*S. Loher, Chokio, at 13,331 by city, paving streets.

Columbus, Miss.—H. C. Peikington, D. A. Burgin and W. H. Castles, road commissioners of the Mayhew road district, awarded contract for the construction of 3 miles of good roads in the Mayhew district to *R. C. Searcy & Co., of this city. Contract calls for the expenditure of \$5,401. Work will begin in 30 days.

Carthage, Mo.—Council awarded *P. J. McNeerley for paving with reinforced concrete Grant St. from Fifth St. to 11th St. at \$1.29 1/2 per sq. yd.

Roanoke, Mo.—Contract for the construction of class F macadam on St. Charles Ave. from Seventh St. to Central Ave. was awarded by the council to *J. J. Underwood.

Butte, Mont.—Council rejected the bid of Robert Metcalf for embankment work, grading, sidewalk, curbs, etc., in district 230, on the northwest side, as being too far above the estimate, and the clerk instructed to readvertise for bids. The estimate of the city engineer was \$16,891.36. The contract for a similar kind of work in another nearby district, 229, was awarded.

Boonton, N. J.—The bid of the *H. B. Sproule Construction Co. of \$4,663.70 for the work on West Main St., Boonton, was accepted by the board. Of this sum the Morris County Traction Co. will pay \$1,000.

Newark, N. J.—Contract for paving Franklin St., Belleville and Bloomfield, with bituminous surfacing on a concrete base, awarded to the *Northern Construction Co., at \$139,495.95.

Newark, N. J.—The road committee of the East Orange city council will recommend that the contract for paving Washington St. with wood block be awarded to Ralph San Giovanni, of 78 Hoyt St., this city, figure being \$52,080. Curbing, corners and accessories will necessitate the expenditure of approximately an additional \$10,000.

Newark, N. J.—Board of freeholders authorized \$600,000 bond issue for nine new county roads.

Albany, N. Y.—Proposals were received by the state highway commission office, 55 Lancaster St., Albany, N. Y., for the improvement of public highways by state aid, May 7, 1917. Road No. 1468, Coeymans-Indian Fields, part 1, Albany Co., 2.92 mi.; no proposals received.

Road No. 1479, Arcade-Farmersville, part 2, Cattaraugus Co., 4.15 mi.; no proposals received. Road No. 1480, Leon-Wesley, part 1, Cattaraugus Co., 3 mi.; no proposals received. Road No. 1510, Afton-Coventry, part 2, Chenango Co., 2.92 mi.; no proposals received.

Road No. 1489, Chazy-Champlain, Clinton Co., 3.34 mi.; no proposals received. Road No. 1447, Brant-North Collins, Erie Co., 4.50 mi.; Rossney Contracting Corp., Buffalo, N. Y., \$74,409.50. Road No. 5634, Evans Center-Farnham, Erie Co., 5.26 mi.; no proposals received. Road No. 5635, Marilla-Wales Center, Erie Co., 5.78 mi.; no proposals received. Road No. 1411, Wadham's Mills-Whallonsburg, Essex Co., 4.95 mi.; no proposals received. Road No. 1496, Westport-Elizabethtown, Essex County, 8.85 mi.; no proposals received. Road No. 1511, Lake Placid vill., Main St. and Saranac Ave., Essex Co., 1.09 mi.; no proposals received. Road No. 1385, Tupper Lake-Saranac Lake, part 1, Franklin Co., 3.53 mi.; withdrawn. Road No. 1442, Barnes Corners-Copenhagen, part 2, Lewis Co., 4.74 mi.; no proposals received. Road No. 1490, Barnes Corners-West Lowville, part 1, Lewis Co., 5.37 mi.; Dale Engineering Co., Utica, N. Y., \$57,940.85. Road No. 1392, Rush-Mendon, part 1, Monroe County, 3.69 mi.; no proposals received. Road No. 1481, Elmgrove-Ridge, Monroe County, 2.73 mi.; no proposals received. Road No. 410, Fort Plain-Hessville-Sprout Brook, Montgomery Co., 5.66 mi.; William C. Flannery, Oneonta, N. Y., \$47,826.81. Road No. 514, Snooks Corners-Amsterdam, Montgomery Co., 2.70 mi.; no proposals received.

Road No. 517, Palatine Bridge-Stone Arabia, Montgomery Co., 3.70 mi.; no proposals received. Road No. 1498, Manly Corners-Blue Corners, Montgomery Co., 3.63 mi.; no proposals received. Road No. 1504, Stone Arabia-Ephratah, part 1, Montgomery Co., 2.74 mi.; no proposals received. Road No. 5590, Lewiston Heights-Lewiston, Niagara Co., 0.61 mi.; no proposals received. Road No. 5604, Utica-Poland, part 1, Oneida Co., 1.05 mi.; no proposals received. Road No. 5605, Utica City-Oneida St., Oneida Co., 0.53 mi.; Harry W. Roberts & Co., Utica, N. Y., \$27,649.70. Road No. 5640, Camden Vill., Church, Main and Mexico Sts., Oneida Co., 1.27 mi.; Harry W. Roberts Co., Utica, N. Y., \$56,262.75.

William Brennan, Herkimer, N. Y., \$56,289. Road No. 1505, Jordan Vill., N. Main St., Onondaga Co., 0.96 mi.; C. F. Sullivan, Syracuse, N. Y. Road No. 1506, Jordan-Baldwinsville, part 1, Onondaga Co., 5.52 mi.; Dale Engineering Co., Utica, N. Y., \$63,995.75. Road No. 1507, Baldwinsville-Plainville, Onondaga Co., 7.45 mi.; no proposals received. Road No. 5625, Fayetteville-Chittenango, Onondaga Co., 3.94 mi.; no proposals received. Road No. 5630, Weedsport-Jordan, part 2, Onondaga Co., 1.76 mi.; C. F. Sullivan, Syracuse, N. Y., \$40,982.20.

Road No. 1508, Washingtonville Vill., Orange Co., 2.48 mi.; no proposals received. Road No. 1502, Short Clove, Rockland Co., 0.24 mi.; Eugene Cavallo, Haverstraw, N. Y., \$15,472.15. County of Rockland, Stony Point, N. Y., 15,618.95. John A. Jova, Newburgh, N. Y., \$16,635.80. Road No. 1461, Schuylerville-Gansevoort, Saratoga Co., 9.06 mi.; no proposals received. Road No. 1482, Pattersonville-Scotch Church, Schenectady Co., 3.42 mi.; no proposals received. Road No. 5577, Middleburg-Breakabeen, Schoharie Co., 7.96 mi.; Lane Construction Corp., Meriden, Conn., \$130,867.06.

Road No. 1103, Hartsville-Canisteo, Steuben Co., 5.59 mi.; Kennedy Construction Co., Albany, N. Y., \$98,465. Road No. 1048, Smithtown-Fort Salonga, part 1, Suffolk Co., 3.87 mi.; Robert W. Smith Corp., New York City, \$13,989. James McAvoy, New York City, \$17,409.50.

Road No. 1464, High Falls-Stone Ridge, Ulster Co., 1.80 mi.; Conway Bros. & Kennedy, Eddyville, N. Y., \$28,724.48; Jos. Walker, Albany, N. Y., \$28,974.25. Road No. 1501, Chestertown-Hague, part 4, Warren Co., 4.55 mi.; no proposals received. Road No. 5637, Whitehall-Dresden, part 2, Washington Co., 5.77 mi.; no proposals received. Road No. 5606, Tuckahoe-White Plains, part 2, Westchester Co., 2.74 mi.; James McAvoy, New York City, \$67,809.60. Wilkes-Casey Eng. & Contg. Co., New Rochelle, N. Y., \$80,303.90. Road No. 1456, Westchester Ave., Westchester Co., 1.09 mi.; no proposals received. Road No. 1370, Harts Corners-White Plains, Westchester Co., 1.74 mi.; no proposals received.

Camden, N. Y.—*Harry W. Roberts Co., Utica, awarded contract for the new state road over Church, Main and Mexico Sts., at \$56,262.75.

Rochester, N. Y.—*Whitmore, Rauber & Vicinus, 279 South Ave., \$50,000, by city, cement sidewalk and asphalt paving.

Islip, N. Y.—*Latito & Romer, Patchogue, at \$36,329, by C. D. Schlemmer, supt. highways, paving 2,900 cu. yds. concrete and 8,000 sq. yds. Warrenite resurfacing.

Canton, O.—County Commlrs. awarded for the paving of the Canton-Middlebranch road from the Canton City limits north for 1 1/4 mile to *Harry Corl, of this city, with brick with a tar filler and with a concrete curb and gravel base for \$38,540.10; also for Meyer's Lake road out of the city.

Canton, O.—County commissioners awarded contracts for paving of two county roads. The extension of Fulton road N. W. from 18th St. N. W. for about a mile and a half toward Canal Fulton will be improved and paved with brick with tar filler and with a combination base and curb of concrete. *C. L. Stoner of Massillon, former clerk of the county commissioners, at \$46,325.56. *Harry Corl of Canton for paving 12th St. N. W. extension past the south side of Meyer's Lake to Whipple road. Will provide a paved road from Canton to the lake, with brick with tar filler and a slag base, for \$22,573.15.

Cleveland Heights, O.—For grading, draining and paving Bradford road from Lee to Taylor road. *Pace Bros., 608 Marshall Bldg., Cleveland. F. A. Pease Engineering Co., Engrs., 806 Marshall Bldg., Cleveland.

Cleveland, O.—For paving, curbing and draining let by Edw. Shattuck, commis-

sioner of purchases and supplies, 219 City Hall, as follows: Jeffries Ave., S. E., to *Enterprise Paving & Construction Co., 8444 Broadway, at \$10,846; E. 127th St., to *O. J. Leach, 504 Eddy road, at \$4,931. Robt. Hoffman, Engr., 617 City Hall.

Louisville, O.—The contract covering the completion of the North Chapel road paving in Louisville, from the square to the north corporation line, has been let by the bonding representatives of the Turnbull Bros. contracting firm to the *Graham Construction Co., of Columbus, W. W. Roach, Director of Pub. Serv.

Zanesville, O.—Bids opened May 4 for the paving of Prospect Ave., from Cliffwood Ave. to Luck Ave., 4,500 sq. yds., with brick pavers and 6-in. concrete base. The contract was awarded to *Boilin & Howell of this city; also to the *Adams Bros. Contracting Co. for the paving with brick paving blocks and 6-in. concrete base of 5,334 sq. yds. on Forest Ave. from Linden Ave. to Maple. W. W. Roach, Director of Pub. Serv.

Hasletton, Pa.—City awarded contracts totaling about \$90,000 for street and sewer work during the summer. *John A. Leffler, local contractor, paving with amesite, prices were \$1.24 for North Church and Vine Sts., and \$1.22 for Green St. Sewers were let as follows: Diamond Ave. and Arthur St., *James Correll, \$10,013.31; Grant St., from 13th to 17th Sts., *Ario Ruth, \$2,884.10; Peace, 17th, Grant and 19th Sts., *Ario Ruth, \$29,418.30.

York, Pa.—West York borough council awarded contract for an asphalt treatment of West Market St., between the crossing of the Western Maryland railroad and the western limits of the borough was given to the *Atlantic Refining Co.

Providence, R. I.—State Bd. Pub. Rd. recived low bids on building 13 miles of highways. The bids are all for bituminous construction, excepting one mile in East Providence, which is to be cement concrete. They were taken under advisement. The bids follow: Mendon road, 1 mile, town of Cumberland, T. J. Quinn, Aston, \$13,693; Putnam pike, town of Smithfield, 2 miles, Lane Construction Corporation, Meriden, Conn., \$41,190.75; Hartford pike, town of Johnston, 2 miles, Joseph McCormick, East Providence, \$39,069.20; New London turnpike, Cranston and Warwick, 1 mile, Charles S. Towle, Wakefield, \$17,297.20; Lane Construction Corp., Meriden, Conn., \$19,413.10; Boston Neck road, North Kingstown, 1.5 mile, Charles S. Towle, Wakefield, \$51,336; Amos D. Bridges Sons, Hazardville, Conn., \$36,306.50; Lane Construction Corp., Meriden, Conn., \$40,587. Taunton Ave., East Providence, 1 mile, cement concrete, Joseph McCormick, East Providence, \$37,086. Main road, towns of Warren and Bristol, 1.4 mile, Amos D. Bridges Sons, Hazardville, Conn., \$31,799; Callan Construction Co., Bristol, \$30,651.60; East Main road, Portsmouth, 2 miles, Lane Construction Corp., Meriden, Conn., \$62,021; Sakonnet Point road, Tiverton, 1 mile, Lane Construction Corp., Meriden, Conn., \$28,561.50; Amos D. Bridges Sons, Hazardville, Conn., \$29,413.50.

Galveston, Tex.—City commissioners opened bids for pavement on Ave. P. between 18th and 19th Sts., on 19th St. Ave. P., to the county boulevard, and on 21st St. county boulevard, to a line 100 ft north of the boulevard. J. C. Kelso & Co., only bidder. And on furnishing shell and gravel from 7th to 18th St. Frank Freund, Good Roads Construction Co., W. D. Haden and H. J. Hetkes. All bids were referred to Commissioner Sapplington and the city engineer for tabulation and report.

Lynchburg, Va.—*S. B. Bennington, Lynchburg, road improvement, Elmwood Ave., asphalt macadam. Engr., H. L. Shaner, Krise Bldg. R. Yester, Mayor; J. M. Ottey, Clerk, Krise Bldg.

Kelso, Wash.—State Highway Board let contract to *Allred & James of Centralia at \$10,728.80 for clearing, grading and surfacing 1.1 mile of the Pacific Highway from the north end of the Kalama River Bridge to the foot of the hill.

Spokane, Wash.—City Council awarded the contract for the regrading and filling of Washington St. from Pacific to First, to the *Spokane Bitu-Mass Pav. Co.

Galt, Ont.—City council awarded the following contracts in connection with improvements on Main and Water Sts.: Castings, *Perfect Machinery Co., Stone road; lumber, *W. I. Reid Lumber Co., Water St., N.; hardware, *Buchanan &

Tait, Main St.; cement, *A. J. Colvin, Water St.; sewer pipe, *Dominion Sewer Pipe Co., Ltd., Swansea; road oil, *Imperial Oil Co., 56 Church St., Toronto.

Toronto, Ont.—The *Godson Contracting Co., Ltd., Manning Chambers, for asphalt pavements on Greenwood Ave., Kingswood road and Silver Birch Ave., for \$31,418; also for asphaltic concrete pavement on Kingswood road, at \$6,452. For brick block pavement on Kingswood road, to the *Asphaltic Concrete Paving Co., at \$7,745.50, and to the *Riverdale Concrete Paving Co., for a concrete sidewalk on Kingswood road, west side, Queen St. to Kingston road, at 15 cts. per sq. ft. for walk and 34 cts. per lin. ft. for curb. By Board of Control.

Woodstock, Ont.—City council to *Geo. Wilkes, 26 Railway St., for the construction of concrete walks, curbs and gutters.

SEWERAGE.

Douglas, Ariz.—Taxpayers voted in favor of issuing \$16,000 sewer system extension bonds.

Fresno, Cal.—See "Streets and Roads."

Los Angeles, Cal.—Council adopted ordinance for the construction of a storm drain in Valverde St., between 7th and Atlantic Sts.; the sewerage of Kenmore Ave., between Sunset Blvd. and Hollywood Blvd.

Joliet, Ill.—See "Streets and Roads."

Indianapolis, Ind.—Resolution adopted for local sewer in first alley north of 18th and in Milburn from Montcalm to 700 feet north of 18th.

South Bend, Ind.—Residents of the South Lawn addition succeeded in having the board approve the resolution for sewers on Donald and Fox Sts. from Miami to Leer St., and on Leer St. from Calvert St. to Ewing Ave.

Davenport, Ia.—The city is contemplating two more big sewer jobs in the Valley St. and Rock Island St. storm drains. Will cost several thousand dollars.

Davenport, Ia.—The Oak St. extension, which is being strongly advocated, will cost approximately \$100,000 if it goes through.

Dubuque, Ia.—Mayor John Kass secured by subscription the sum of \$3,000 for the proposed sewer construction the entire system as already planned; will cost about \$6,000 and the city will pay about \$2,000 of the cost, leaving about \$1,000 still to be raised by the committee.

Emporia, Kan.—City will construct a storm sewer on Seventh Ave. from the alley between Cottonwood and Sylvan Sts. east to the city limits and a storm sewer at Logan Ave. and Sylvan St.

Hutchinson, Kan.—City commission passed resolution for drainage sewers in Hyde Park addition.

Detroit, Mich.—City Engr. Clarence W. Hubbell and Commr. George H. Fenkel, of the Dept. of Public Works, are preparing plans and specifications for sewer contracts under the \$4,000,000 appropriation allowed by the Common Council and Board of Estimates. A total appropriation of \$8,000,000 was allowed for sewers to take care of the outlying districts. Bids will be advertised as soon as plans are prepared.

Holly, Mich.—Council ordered constructed three new sewers.

Hubbell, Mich.—Village council decided to put in a sewer on Eddy St. beginning at 2d St. and running 600 ft. to the Copper Range depot. A 6-in. tile pipe will be used and the work will be done under the direction of Street Commissioner Kahler.

Muskegon Heights, Mich.—Messrs. John F. McLean & Co. of Detroit successful bidder for the \$110,000 sewer bonds. W. J. Barber, City Recorder.

Roanoke, Mo.—City Council passed an ordinance to construct an 8-in. sewer in West Roanoke sewer Dist. No. 3. The estimated cost is \$888.20. Bids will be advertised for at once.

Asheville, N. C.—City commissioners ordered a storm sewer constructed from Liberty St. to Central Ave. A petition for a sewer in Forest Hill drive was received.

Akron, O.—Council approved resolution for improving Uhler Ave., from Wall St. to Cuyahoga St., by constructing a sewer together with laterals for house connections. W. J. Laub, Mayor.

Akron, O.—Council approved ordinance for the improvement of Weeks

St., from Fifth Ave. to a point 570 ft. southerly by constructing a sewer, together with laterals for house connections. W. J. Laub, Mayor.

Akron, O.—See "Streets & Roads."

Canton, O.—Council passed ordinance for the construction of a sanitary sewer in Bonont Pl. N. E.

Canton, O.—Council authorized the service director to get bids for the construction of a storm sewer in Navarre road, S. W.

Cincinnati, O.—City plans for sewer on Barton St.

Elyria, O.—Council adopted ordinance calling for loans of \$1,000 for sidewalk, \$1,500 for the Carlisle sewer and \$1,000 for the West River and Mussey St. sewers.

Maumee, O.—Messrs. W. L. Slayton & Co., Toledo, successful bidder for the \$4,620 sewer bonds.

Middletown, O.—Louis T. Nein, City Aud., receiving bids June 14 for the purchase of bonds of the city, in the aggregate amount of \$16,000 for construction of sewers.

Springfield, O.—City Comm. adopted resolution for constructing a combined sewer in Linwood Ave., from the first alley south of Harrison St. to Van Buren Ave., and a connecting sewer in Van Buren Ave., from Linwood Ave. to Ludlow Ave. C. F. McGilvray, Pres.

Winnipeg, Man.—City council plans to construct a sewer in Queenston St.; estimated cost, \$1,608. City clerk, C. J. Brown.

Wilmington, O.—City defeated the \$75,000 bond to install sewerage system.

Ada, Okla.—An election will be held May 25 to vote on the question of issuing \$25,000 sewage disposal bonds.

Carbondale, Pa.—See "Streets and Roads."

Hazleton, Pa.—City appropriated \$1,800 for the construction of sewer on Green St.

Ogden, Utah.—Board of commissioners plans improvements in sewer district No. 134; estimated cost \$274,000.

Provo, Utah.—Residents of Lake Shore and Benjamin presented petitions for bonding the two districts for a drainage system to cost \$45,000. The election will be held June 9.

Martinsburg, W. Va.—City voted in favor of issuing \$25,000 sewer bonds.

Oshkosh, Wis.—Council adopted resolution directing board of public works to advertise for bids for the construction of sewers in Eighth St., from Iowa St. to Ohio St.; in Sixth St. from Iowa St. to Minnesota St.; in Wall St. from Ninth St. south to Summit; in Simpson St. from 18th St. to Summit.

Hamilton, Ont.—City plans storm sewer in the Kenilworth district. E. R. Gray, City Engr.

London, Ont.—City council plans construction of sanitary sewer on Maitland St. City engineer, H. A. Frazier.

Middleton Twp., Ont.—Twp. Council plans improvement on Mills and South Norwich drains. Clerk, D. W. White, Courtland.

Sault Ste. Marie, Ont.—The Board of Works recommended to the City Council the construction of an 8-in. sanitary sewer from the centre of Upper Brock and Bay Sts., along Bay St. to Lower Brock St., and continuing from Bay St. down Lower Brock St.; 8-in. c. i. sewer from water line to new harbor line; 8-in. sewer on Bay St., from Brock St. to Bell Ave.; also recommend that the East St. sanitary sewer outlet be extended, and that a sanitary sewer and outlet be built on Pine St., from Queen St. to the river.

St. Catharines, Ont.—Construction of a vitrified tile sewer on Geneva St., between Russell Ave. and St. Patrick St., recommended by the works committee. W. P. Near, City Engr.

Stratford, Ont.—Tenders will be called at once for the erection of a concrete chimney, 135 ft. high, at the incinerator. A. B. Manson, City Engr.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Los Angeles, Cal.—See "Streets and Roads."

Los Angeles, Cal.—Bd. of Public Works to *B. Zaich, at \$1,614; a vit. pipe sanitary sewer be constructed in 61st St.; also 60th St., at \$1,195. Horace B. Ferris, Secy.

Los Angeles, Cal.—Bd. of Pub. Works, a vit. pipe sanitary sewer be constructed in Springvale Drive; to John Sutalo, at \$1,082. Horace B. Ferris, Secy.

Frankfort, Ind.—A contract for the

construction of the east end sanitary sewer was awarded to *Michaels & Minich of Marion at \$18,206.15. The bid was accepted on the basis of 15-inch sewer tile. Their bid for 20-inch sewer tile was \$20,391.30.

Indianapolis, Ind.—Board of Public Works let the following contracts: Local sewer in Wheeler St., from Glen Drive to 27th, \$1.98 per ft., and local sewer in Reisner St., from Ray to 500 ft. south, to *Columbia Constr. Co., at \$1.80 per ft.

South Bend, Ind.—Bd. of Public Works for the pipe sewer on Fox St. at \$1,091.60, and Donald St. from Miami St. to Dale St., at \$1,028.45, to *Hoban & Roach.

Hutchinson, Kan.—City Comm. awarded *J. H. Shean & Sons, at \$6,445, for construction of a mile of sanitary sewers in the south part of the city, in the Fifth Ward, and also for new sewers in the Hyde Park addition.

Boston, Mass.—The Mayor approved contracts with *Timothy Coughlin at \$9,738.80, for sewerage works in Norfolk St., from Corbet St. to Blue Hill Ave., and outlet in Walk Hill St., Dorchester. Bids for the work opened April 24.

Boston, Mass.—The Mayor approved contract with *Daddario & Booth for pipe sewers and drains in Foss Rd., between Beaumont St. and Elm Rd., Dorchester, at \$860.50.

Marinette, Mich.—City council awarded to the *Gray Robinson Co. the contract to install the sewer on Marinette ave., at \$23,280.88.

Austin, Minn.—H. J. Carthroe Co., Omaha, Neb., sanitary sewers, about 4,000 ft. 8 to 12-in. Engr. Oscar F. Weisgerber. Fox R. Smith, City Rec.

Rutherford, N. J.—For sanitary sewers and appurtenances, *Jannarone Construction Co., 225 Passaic Ave., Belleville, N. J., at \$3,500. Wise & Watson, Engrs., Railroad Square, Rutherford.

Cleveland, O.—Sewering, *W. F. Stengel & Co., 1947 W. 100th St., at \$5,066; *J. Connally Construction Co., 520 Leader Bldg., at \$13,064, and *D. Zullo, 2265 E. 105th St., at \$8,703, by Dept. of Purchase & Supplies, Edw. Chattuck, Comr. Robt. Hoffman, Engr., 617 City Hall.

Hazleton, Pa.—See "Streets & Roads."

Phoenixville, Pa.—Borough council awarded *Frank Cannon, of Allentown, at \$2,090, for completing the Toy St. sewer from Church St. to the French Creek.

Caledon, Ont.—See "Streets and Roads."

St. Catharines, Ont.—*Michell & Nahan, London, by city council, for the construction of a relief sewer along York St., from Dufferin St. to Albert St.

WATER SUPPLY.

Richmond, Cal.—The East Bay Water Co. is planning to spend \$50,000 to make extensions of its service into new districts of Richmond that are in the line of building development.

Hartford, Conn.—Bd. Water Comms. will soon let contracts laying about 28,000 ft. 42, 36, 30 and 24-in. pipe.

Washington, D. C. (Bureau of Foreign and Domestic Commerce).—Quotations are desired by a company in Canada on hydrants. Correspondence may be in English. Refer to Opportunity No. 24407.

Hamilton, Ga.—J. R. Lowe contemplates the construction of water works.

Swainsboro, Ga.—The city has decided not to approve bonds for water works.

Farmington, Ill.—City voted \$20,000 bonds to improve water system.

Joliet, Ill.—See "Streets and Roads."

Marena, Ga.—City voted \$17,000 bonds to install water system.

Garden City, Kan.—City preparing plans for pumping plant and extending water mains.

Salem, Mass.—Recommendations of the public works committee that a Ford truck be purchased for the use of the water department and a 3-ton truck for the street department, were referred to the finance committee.

Mankato, Minn.—City Engineer Blomquist was instructed to make plans and specifications for the extension of the water mains to the Miller ice house on Poncar St.

Minneapolis, Minn.—City will lay 6 miles 6, 8 and 12-in. c. i. pipe and install 3,500 new service connections, 50 hydrants and one 34-inx17-in. venturi meter.

Remer, Minn.—City voted \$10,000 in bonds to install water system. W. C. Buck, 4821 Fremont Ave. S., Minneapolis, Engr.



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St. John, N. B. Halifax, N. S. Sydney, N. S.



Sidney, Mont.—Voted in favor of issuing \$10,000 water bonds. F. J. Matausk, City Clerk.

Pembroke, N. H.—City contemplates purchase of 450 ft. 6-in. wood pipe, 2 service connections, 1 hydrant and 1 gate valve. R. A. Robinson, Chmn. of Comm.

Hopewell, N. J.—Borough Council will have a gas engine installed at its water works to take the place of the gasoline engine now in use.

South Amboy, N. J.—Common Council planning for the construction of a municipal water pumping plant for water system.

Greenville, N. C.—Town Clk. Jas. C. Tyson receiving bids June 7, 8 p. m., \$100,000 water and light improvement bonds.

Akron, O.—See "Streets and Roads."

Mansfield, O.—Council approved ordinance authorizing the issuance of \$35,000 bonds for the purpose of building an extension to the pump room at the Main station of the water works and for the installation of motor driven pumps, switchboards and necessary piping.

Mansfield, O.—City Council authorized Service Director Hursh to receive bids to put city water works system completely under electrical control.

Marietta, O.—The First National Bank of Marietta was the successful bidder for the \$75,000 water works bonds. A. J. Stevens, City Aud.

Marietta, O.—Council adopted an ordinance instructing the Service Director to advertise for bids for the construction, installing and equipping of the new concrete reservoir, that is to be erected on Gross Hill.

Zanesville, O.—See "Streets & Roads."

Ada, Okla.—Taxpayers will decide May 25 on the question of issuing \$5,000 water works bonds.

Phoenixville, Pa.—Council authorized the water committee to equip the water works with an air blowing system, to clean the boilers, the cost to be \$85 per boiler.

Bristol, R. I.—Bristol Water Works planning to install a meter system.

Corsicana, Tex.—Citizens voted in favor of issuing \$50,000 water bonds.

Martinsburg, W. Va.—City voted in favor of issuing \$5,000 water works bonds.

Victoria, B. C.—City Engineer C. H. Rust has recommended that a 12-in. main be substituted for the present 8-in. pipe on Yates St. from Blanchard St. to Camosun St., in order to increase area supplied by high pressure system.

Brantford, Ont.—R. S. & W. S. Lea Co., New Birks Bldg., Montreal, have been appointed by the city council to report on water supply. T. Harry Jones, City Engr.

St. Thomas, Ont.—City Council may install a gasoline engine at the water works. City Engr. M. Ferguson.

Chicoutimi, Que.—Work will start

shortly on the construction of water works fifteen miles long, for Pitre Laberge. Wood pipes will be used with cast-iron fittings. Owner buys material. Engr. J. A. Claveau.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Pocatello, Id.—Council accepted bid of the *American Wood Pipe Co. of Tacoma for the pipe to be used in the Gibson Jack-Mink Creek water line.

Joliet, Ill.—Board of Local Improvements awarded *Curtis & Tindall for the construction of water main in Douglas St. from a point 165 ft. west of Raynor Ave. to Prairie Ave. Following prices: Price per lin. ft. for all material and construction of 6-in. c. i. water main calked and finished complete: Price per lin. ft. of material, \$1.25. And construction of a 4-in. c. i. water main calked and finished complete, 90 cts. Price per lin. ft. for excavation and backfilling trenches over water main, hydrant and service connections, 30 cts. Lead service connections 9 ft. long with corporations and stop cocks connected to main complete; price each \$10. Lead service connection 27 ft. long with corporations and stop cocks connected to main complete; price each \$15. Six-in. gate valves, price each in place complete, \$19. Six-in. hydrant; price in place complete, \$52. Buffalo boxes, complete; price each, \$1.50. Valve manhole in place complete; price each, \$25. Specials in place complete: 6x6x6 tee, \$14; 6x4 reducer, \$8; 4-in. plug, \$1; 6-in. plug, \$1.50. Extra work according to engineer's estimate, \$80. Frank W. Wheeler, Clk.

Adel, Ia.—*P. N. Kruse, Spencer, Ia., for water main in Main St. B. G. Glinley, Engr. Adel.

Fitchburg, Mass.—*G. Rosse & Son, 10 Oxford St., Leominster, at \$14,808, by city, compensating reservoir.

South Stillwater, Minn.—For water works, including concrete reservoir, brick and concrete pump house, machinery, pipe line, etc., *Marion Machine Co., 183 University Ave., St. Paul, Minn. L. W. Clark, Engr. Stillwater.

Virginia, Minn.—The water and light board purchased from the *Heine Safety Boiler Co., of Chicago, for \$18,888, a huge boiler to be used in the municipal heating plant.

Athens, N. Y.—Borough Council for 32 hydrants at \$37.56 a hydrant, *The Sayre Water Co. for the next five years.

Cellina, O.—A. W. Fishbaugh at \$10,000 for water pipe extension. Board of Control. Geo. A. Petrie, Clk.

Guelph, Ont.—The following contracts awarded by the Water Comrs., for annual supplies: C. i. pipe, *National Iron Works, Toronto; galvanized iron pipe, *Bond Hardware Co., Guelph; valves, *Kerr Engine Co., Walkerville; brass goods, *Canada Brass Co., Galt.

MISCELLANEOUS.

Mobile, Ala.—Citizens in the near future will vote on two major projects for port development; \$55,000 for the construction of a telpher system and expenditure of \$600,000 to erect modern docks at the Arlington site on Mobile Bay. To do this, however, permission of the United States War Dept. and of the Alabama Harbor Comm. must be obtained. The city will construct a bulkhead at Arlington, pier and dredged channel, turning basin and other water terminal facilities, connected by rail, including about 2,000 ft. front along Choctaw Point. The telpher system will constitute a complete overhead electrical system with trolleys having a carrying capacity of 1,000 pounds each. Six thousand trolley loads can be delivered over the main line to the water front in 10 hours, and an equal number moved away from the water front at the same time. Working two shifts per day, 12,000 bales of cotton taken from cars or warehouses could be placed at shipside on the city wharf, or at other connecting piers, and at the same time by outward movement, an equal number of sacks of coffee, sugar or barrels of flour could be moved from the water front to the warehouse or cars. The system is simply an elevated movement without interference with street traffic.

Douglas, Ariz.—Taxpayers voted in favor of issuing \$16,000 City Hall bonds.

Los Angeles, Cal.—Council adopted resolutions authorizing the board of public works to advertise for bids, award and enter into the necessary contract for the construction of a municipal building in the Wilmington district and for the collection and disposal of market refuse.

Washington, D. C.—Bureau of Foreign and Domestic Commerce (Dept. of Commerce).—An agency is desired by a company in Colombia for the sale of c. i. pipes and black and galvanized w. i. pipes and fittings. It also wishes to represent American manufacturers and exporters of steel and iron bridges for railroads and highways. Correspondence may be conducted with a member of the firm who is now in the United States. Refer to Opportunity No. 24,435.

Springfield, Ill.—Commissioner of Finances J. Emil Smith received from C. S. Chapman, bonding expert in Chicago, and John T. Creighton, of Springfield, an attorney, assurances that the bonds for \$60,000 for putting the city's wires underground and bonds for \$30,000 to motorize the fire department are legal in every respect. City commission and the city legal department will decide plans of disposing of the bonds.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	RECD UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
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STREETS AND ROADS.

Pa., Erie10:30 a.m., May 18..	Repaving and paving several streets.....	F. G. Lynch, City Engr.
Mass., Boston	.....noon, May 23..	Sheet asphalt, Topeka or bitulithic on 5 streets.....	E. F. Murphy, Comr. P. W.
O., Springfield	.....noon, May 25..	Paving 5 streets	C. E. Ashburner, City Mgr.
Pa., Elton	.....June 20..	5 miles of permanent highway, brick or concrete.....	O. P. Thomas, Engr., Leader Bldg., Johnstown.

SEWERAGE.

Mass., Boston	.....noon, May 18..	Pipe sewers and drains in Dorchester.....	E. F. Murphy, Comr. P. W.
O., Springfield	.....noon, May 25..	Sanitary sewer	City Engr.
N. Y., New York	.....2 p.m., May 25..	Tunnel relief sewer in West 46th St.....	Bur. of Sewers, Room 2103, Municipal Bldg.

WATER SUPPLY.

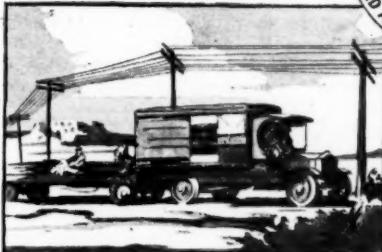
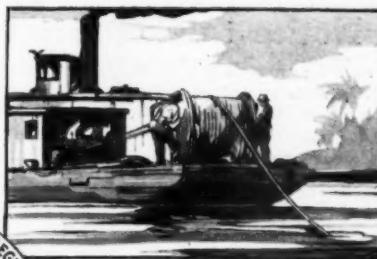
Mass., Boston	.....noon, May 18..	Laying 2,960 ft. 8 to 12-in. water pipe.....	E. F. Murphy, Comr. P. W.
Ill., Chicago	.....11 a.m., May 21..	3,000 shut-off boxes and 200 extensions.....	F. I. Bennett, Comr. P. W.
Mass., Boston	.....noon, May 28..	142 tons c. i. specials.....	Pat'k O'Hearn, Acting Supt. of Supplies.
O., Canton	.....noon, May 28..	2 or 3 electrical centrifugal pumps; total capacity, 15,000,000 gals. per day.....	L. B. Ohliger, Supt. of W. W. Bldg., Toledo.
Ind., Kendallville	.....June 12..	Water works, including 500,000-gal. concrete reservoir, piping and 3 turbine force pumps.....	Geo. Champe, Engr., Nasby Bldg., Toledo.

MISCELLANEOUS.

Mass., Boston	.....noon, May 17..	Automobile tires and tubes.....	Pat'k O'Hearn, Acting Supt. of Supplies.
Minn., Minneapolis	.....3 p.m., May 21..	Motor generator set for the City Hospital.....	K. E. Alexander, City Pur. Agt.

PROPOSALS**FOR SALE**

One Watrous Gasoline Fire Engine, 22 horse power; in good condition. Can be seen working any time. Reason for selling, have high pressure system. Write Secy., Hope Fire Co., Barnesboro, Pa.

**Dump Wagons**

Bids will be received by Ford City Borough, Pa., until May 21st, 1917, for one 2½ to 5-Ton Motor-Driven Truck, with a Dump Bed.

Council reserves the right to reject any or all bids.

Send bids to Ford City Borough, Pa.
D. O. CROUCH, Secretary.

NOTICE**Automobile Police Patrol**

Separate sealed bids will be received by the Mayor and City Council of the City of Garfield, N. J., for an Automobile Police Patrol, Tuesday evening, May 22, 1917, at 8 o'clock.

Bids are to be addressed to John A. Dwyer, City Clerk, and are to be accompanied with a certified check in the amount of \$500.00 in favor of Calvin Terhune, Collector.

The Mayor and Council reserve the right to reject any and all bids.

JOHN A. DWYER,
City Clerk.

(Continued on Page 38)

STREETS AND ROADS.

San Jose, Cal.—A large delegation from some 15 clubs, headed by Andrew P. Hill, president of the Sempervirens' Club, will urge the board of supervisors to build 7 miles of road from Saratoga to the Saratoga Summit, linking up with the state road there.

Bridgeport, Conn.—Chamber of Commerce has adopted resolution urging upon the State Highway Department the necessity and advisability of constructing a trunk highway between Bridgeport and Danbury through the towns of Fairfield, Easton, Redding and Bethel along the Black Rock turnpike.

Orlando, Fla.—City will vote May 23 \$100,000 bonds for street paving and city building.

St. Petersburg, Fla.—Bonds for the Pass-a-Grille road and bridge district, recently approved by the vote of the property owners in this district, cannot now be attacked as the legislature has passed a bill validating the issue. The bonds were voted to raise money to pave with brick, roads leading to Pass-a-Grille. A bridge is to be built across Boca Ceiga Bay and will reach the island about three miles from Pass-a-Grille. A road is to be built along the gulf leading from the bridge to the town proper. A road also will be built from Davisto, where the brick paving from St. Petersburg proper extends, to the mainland end of the bridge. The whole work will be finished in about a year after work starts.

Carrollton, Ind.—Perry county commissioners failed to award contract for Tordin township macadam road advertised for May 7.

Jackson, Mich.—The Detroit Trust Co., Detroit, purchased the semi-annual bonds aggregating \$191,500—paving, \$61,500; sewer, \$40,000; city hospital, \$50,000; water works improvements, \$40,000. Clifton H. Vedder, City Clerk.

Great Falls, Mont.—On recommendation of the public improvement committee it was ordered that concrete curb be constructed on the north side of Fourth Ave.

Meeting the Universal Need

In the high passes of the mountains, accessible only to the daring pioneer and the sure-footed burro, there are telephone linemen stringing wires.

Across bays or rivers a flat-bottomed boat is used to unreel the message-bearing cables and lay them beneath the water.

Over the sand-blown, treeless desert a truck train plows its way with telephone material and supplies.

Through dense forests linemen are felling trees and cutting a swath for lines of wire-laden poles.

**AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES**

One Policy

One System

Universal Service

southwest from Eighth to Ninth Sts., and walk and curb on the south side of the same block.

Great Falls, Mont.—A resolution was adopted declaring it to be the intention of the council to create a special improvement district for boulevardizing the north side of Third Ave., north between 32d and 35th Sts., at an estimated cost of \$770.

Benson, Neb.—James A. Howard, president Bank of Benson, purchased the \$30,000 paving bonds. C. Hollestelle, City Clerk.

Jefferson, N. C.—Ashe county defeated the proposition for good roads.

Crestline, O.—Village Clerk Edward Libens receiving bids June 5 for \$1,900 street improvement bonds.

Albany, Ore.—Road Supervisor Isom announced that 31 miles of the Pacific

Highway could be graded and drained for \$7,000.

Grants Pass, Ore.—Resolution for improving alley at cost of \$202 was passed.

Pendleton, Ore.—Ordinance authorizing bids for paving Willow and Madison Sts. have been passed by council; cost, \$8,272.25.

Carlisle, Pa.—City will authorize a \$65,000 bond issue to be voted on in November for improving streets.

Elton, Pa.—Citizens of Adams and Richland townships authorized the construction of 5 miles of permanent highway. O. P. Thomas of Johnstown selected engineer.

Danville, Va.—City council passed the sum of \$3,700 for the purpose of finishing up various street improvements ordered, but halted at the close of the last fiscal year.

Notice to Contractors

Sealed proposals will be received at the office of the undersigned, in the City of Johnson City, Tennessee, until 7:30 P. M., June 5, 1917, for constructing sewers according to plans and specifications on file in the office of the City Engineer.

Approximate Quantities

THIRD WARD SEWER

1,459 feet 15-inch vitrified pipe sewer;
765 feet 12-inch vitrified pipe sewer;
144 feet 10-inch cast iron pipe sewer;
642 feet 10-inch vitrified pipe sewer;
779 feet 8-inch vitrified pipe sewer;
15 manholes.

Approximate Quantities

BRUSH CREEK SEWER

3,802 feet 15-inch vitrified pipe sewer;
48 feet 15-inch cast iron pipe sewer;
8 manholes.

Each bid must be accompanied by a certified check equal to five per cent. of the amount of the bid as a guarantee of the good faith of the bidder.

Bids are asked for payable in cash or bonds at the option of the City.

Bids will be received for the construction of each sewer separately, and also for the furnishing of the material for each sewer separately.

The right is reserved to reject any or all bids.

Bids will be opened at a regular meeting of the City Council, Tuesday, June 5, 1917, at 7:30 P. M.

P. F. McDONALD,

City Commissioner and Engineer.

WM. E. HATCHER,
Recorder.

PROPOSALS FOR STREET PAVING.

Sealed proposals will be received at the office of the undersigned, in the City of Johnson City, Tenn., until 7:30 p.m., Tuesday, June 5, 1917, for constructing street paving with asphalt, asphaltic concrete, cement concrete or tarvia for Improvement Districts No. 20, No. 21, No. 23, according to plans and specifications in the Office of the City Engineer. The City reserves the right to award separate contracts for each paving district and to award curb and gutter or sewer separate from paving, and to reject any or all bids.

APPROXIMATE QUANTITIES.

District No. 21—W. Market St.
6,217 sq. yds. paving, including grading.
4,418 lin. ft. curb and gutter, including grading.
1,220 lin. ft. 12-in. vit. sewer.
1,805 lin. ft. 10-in. vit. sewer.
2,448 lin. ft. 6-in. vit. sewer.
5 manholes.
1 reinforced concrete bridge.

District No. 20—Pine St.
8,842 sq. yds. paving, including grading.
5,114 lin. ft. curb and gutter.
1,668 ft. 8-in. vit. sewer.
1,613 ft. 6-in. vit. sewer.
4 manholes.

District No. 23—Roan St.
9,978 sq. yds. paving, including grading.
5,965 lin. ft. curb and gutter, including grading.
2,393 lin. ft. 8-in. vit. sewer.
1,740 lin. ft. 6-in. vit. sewer.
8 manholes.
30 ft. 12-in. storm sewer.
5 catch basins.
170 ft. 18-in. storm sewer.
40 ft. 24-in. storm sewer.

Each bid must be accompanied by a certified check equal to 10 per cent of the amount of bid as a guarantee of good faith of the bidder. Payment for work to be made in 5½ per cent bonds.

Bids will be opened at regular meeting of Board of Mayor and Aldermen, 7:30 p.m., Tuesday, June 5, 1917.

P. F. McDONALD,
WM. E. HATCHER,
Recorder.

Proposal adv. continued on page 37.

OFFICIAL ADVERTISING

"Reaches Most Bidders at the Least Cost"

Rate \$2 an inch. Copy reaching us by 10 a. m.
Thursday will go in issue mailed that night.

HIGHWAY WORK

Office of The State Commission of Highways, Albany, N. Y.

Sealed proposals will be received by the undersigned at their office, No. 55 Lancaster street, Albany, N. Y., at one o'clock p. m., on Monday, May 28th, 1917, for the repair of highways in the following counties:

ALBANY (two contracts—reconstruction and resurfacing).

CAYUGA (one contract—resurfacing).

COLUMBIA (one contract—reconstruction).

ESSEX (one contract—resurfacing).

GREENE (two contracts—surface treatment and reconstruction).

HERKIMER (one contract—surface treatment).

JEFFERSON (one contract—resurfacing).

NIAGARA (one contract—resurfacing).

ONTARIO (one contract—resurfacing).

ORLEANS (one contract—resurfacing).

OTSEGO (one contract—reconstruction).

RENSSELAER (one contract—surface treatment).

SARATOGA (one contract—resurfacing).

SENECA (one contract—resurfacing).

SUFFOLK (two contracts—surface treatment and resurfacing).

ULSTER (one contract—resurfacing).

WASHINGTON (two contracts—resurfacing and surface treatment).

WESTCHESTER (one contract—reconstruction).

Also for the improvement of highways in the following counties:

COLUMBIA (approx. 7.77).

JEFFERSON (approx. 0.66).

Maps, plans, specifications and estimates may be seen and proposal forms obtained at the office of the Commission in Albany, N. Y., and also at the office of the Division Engineers in whose division the roads are to be improved. The addresses of the Division Engineers and the counties in which they are in charge will be furnished on request.

The especial attention of bidders is called to "General Information for Bidders" on the itemized proposal, specifications and contract agreement.

EDWIN DUFFEY,

Commissioner.

I. J. MORRIS,
Secretary.

WANTED—Engineers experienced in Bituminous Macadam construction. Must be capable of taking complete charge of new work, including grades, culverts, drainage and all engineering work. Rush job. State experience, references and salary expected. Address "E. C.", Room 712, 381 Fourth Ave., New York City.

WANTED—Foreman experienced in Bituminous Macadam road construction. State experience, references and salary expected. Address "B. M.", Room 712, 381 Fourth Ave., New York City.

WANTED

Macadam and Tandem Roller—
Must be in good condition. Address Box 795, c/o Municipal Journal.

SPECIAL OFFERING, CHOICE RELAYS

45 Miles — 60 Lb. Steel Rails

A. S. C. E. Section, with continuous bars.
Almost New. Western Delivery.
We have large tonnage other sections.

STEEL PILING

Prompt Shipment from Stock.

600 pcs. 12-ft. Wemlinger 12"x7½ lbs.
345 pcs. 16-ft. Lackawanna 7"x3½"
363 pcs. 20-ft. United States 12½"x3¾"
585 pcs. 20-ft. United States 12"x3¾"
180 pcs. 20-ft. Lackawanna 14"x3¾"

All first-class driving condition. We have a large stock of all makes, in various lengths. What do you need?

CARS, LOCOS, EQUIPMENT, etc.



TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C., May 7, 1917.—Sealed proposals will be opened in this office at 3 p. m., June 14, 1917, for the construction of the United States post office at Cherryvale, Kans. Drawings and specifications may be obtained from the custodian of the site at Cherryvale, Kans., or at this office, in the discretion of the Supervising Architect. Jas. A. Wetmore, Acting Supervising Architect.

TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C., May 10, 1917.—SEALED PROPOSALS will be received at this office until 3 P. M., June 11, 1917, and then opened for remodeling the U. S. Post Office, Bridgeport, Conn., in accordance with the drawings and specifications, copies of which may be had at this office or at the office of the Custodian in the discretion of the Supervising Architect. JAS. A. WETMORE, Acting Supervising Architect.

TRANSITS AND LEVELS RENTED OR SOLD EASY TERMS

THE ENGINEERING AGENCY, Inc.
8 West Jackson St.
Chicago

FOR SALE

Ten Ton, Three Wheel Roller,
Cheap, McCormick & Son, c/o Municipal Journal.

Bids Called For

Bids will be received at Kendallville, Indiana, until June 12th, for water-works improvements, including one-half-million-gallon concrete reservoir, three turbine force pumps, and piping.

Address E. O. MICHAELS, City Clerk, Kendallville, Ind.

Paving Inspector Wanted

Inspector wanted at once fully qualified by experience to inspect construction of wood block pavement on concrete foundation to be completed in 1917. Give references, experience and salary wanted. Address Mr. FRED T. CRANE, City Engineer, Orange, New Jersey.